4 Natural Ingredients

Effective programs of skin and hair care are based on cosmetic ingredients that are authentic, pure, and fresh and have properties beneficial to you. Use this chapter to familiarize yourself with the large number of natural ingredients which can be used cosmetically and to identify ones which are suitable for you.

When you go to shop, be aware that the availability of plant-based ingredients may be subject to both the harvest cycle and the success of the crop. Sometimes a certain item is not available. When the crop is poor, there may not be any available as the industrial demands seem to precede ours. I have waited over a year for unrefined walnut oil when the crop failed. And I have not found unrefined almond oil for the past two years, because all the oil that was produced was refined to meet higher priority demands.

As you study this very long list of ingredients, keep in mind that not every ingredient with a certain property will have that effect on you. You may have to try several different ingredients before finding one that works for you. Just as not every person will suit you, not every plant or clay will suit you. This is the way of the world.

Quality

In cosmetics there is a direct relationship between quality and effectiveness: the higher the quality, the greater the effectiveness. Quality is most affected by purity, freshness, the absence of synthetic ingredients, and processing.

In most cases fresh is best. Dried herbs lose their potency after a year or so. Floral waters are generally good for about one year. Some vegetable oils may be fresh for as little as a few months.

Few natural ingredients are used in the form in which they naturally occur. Usually they are extracted from raw material. There are different methods of extraction, the main ones being

- expression—where the ingredient is pressed from the raw material,
- solvent extraction—where compounds are dissolved in a solvent, and
- steam distillation—where the ingredient is removed by steam.

There is an important difference between *extract* and *derivative*. An extract contains a group of chemical compounds removed *intact* from raw material. A derivative is a chemical substance *made* from another substance in one or more steps. A derivative is by definition manufactured, and thus synthetic—it does not occur naturally.

The presence of synthetic ingredients can reduce, even negate, the benefits to be gained from natural substances! This includes preservatives commonly added to commercial cosmetics.

Processing, especially that employed by commercial producers of cosmetics, can damage or destroy the life energy of plant- or animal-based ingredients. When this happens the resulting substance is inert and incapable of providing biologically active effects. It is best to avoid cosmetics/ingredients that have been irradiated or microwaved, refined, or heated over 140° F.

Choosing ingredients and/or prepared cosmetics that are completely natural requires care. Be sure to read labels and ask questions. Many products labeled "natural" or sold in a health food store are likely to contain synthetic, manufactured ingredients.

Ingredients can be subject to *synergy*, whereby a mixture may have a greater beneficial effect than the combined effects of the individual ingredients. Combining ingredients with similar properties strengthens the effectiveness of the entire mixture.

Within the plant world there are more natural substances for skin and hair care treatments than in the entire animal kingdom. Herbal extracts also work far better to improve the skin and are better tolerated than any animal extract. Even collagen and hydrolyzed animal protein, two animal substances that work very well on the skin and hair, can be replaced with plant substances that work better and are safer.[11]

Natural organic* ingredients—especially vegetable oils, herbs, essential oils, and floral waters—deteriorate in the presence of ultraviolet light, heat, and oxygen. Simple actions can prolong their life: keep them in the dark, store them in air-tight glass containers, and keep them cool, even refrigerated. Protect them from contamination by practicing good hygiene when repackaging and making cosmetics: don't touch them; instead, pour, pump, spray, or scoop.

Active and Inert Ingredients

Many products are sold today with labels that classify their ingredients as active or inert. You may be wondering how this applies to your cosmetic products. In nature there are no inert substances—everything is active!

Properties and Effects Related to Skin and Hair Care

Antibiotic: combats infection by inhibiting or destroying microorganisms.

Antiseptic: helps to prevent tissue degeneration and inhibits bacterial infection.

Astringent: causes tissue to contract. This is useful for puffy and/or swollen skin and to temporarily help large pores look smaller.

Bactericidal: destroys bacteria.

* Organic is used here to refer to carbon-based ingredients—substances from living organisms.

Barrier agent: A substance that obstructs the passage of other substances. A barrier agent should be non-irritating, easy to apply and remove, relatively imperceptible on the skin; it should adhere well to the skin and form a flexible, non-cracking film.

Calmative: haves a calming or tranquilizing effect.

Cicatrisant: helps the formation of scar tissue.

Cleansing: removes dirt, impurities, and extraneous matter (such as dead skin cells).

Cytophylactic: stimulates the generation of new skin cells.

Decongestant: relieves skin congestion. *Webster's New Collegiate Dictionary* defines a congested organ (remember skin is an organ) as having "an excessive fullness of the blood vessels."

Deodorant: destroys odor.

Depurative: purifies the blood.

Detoxicant: removes toxic substances.

Diaphoretic: increases perspiration.

Disinfectant: destroys germs.

Emollient: lubricates and softens skin tissue.

Emulsifier: holds two dissimilar ingredients together. An emulsifying action can be provided by vigorous mixing (as is done in mayonnaise). Some products should be well shaken before each use.

Healing: Healing agents are desirable ingredients in moisturizers; they reduce skin sensitivity and heal chapping, scratches, and dry skin problems.

Humectant: controls the moisture exchange between the product and the air; it attracts moisture. It also releases water gradually. In moisturizers an humectant helps to hydrate your skin and contributes to the product consistency. In a facial mask, it allows the mask to dry on the skin.

Moisturizing: raises skin moisture content.

Occlusive: An occlusive agent holds strongly to the skin's surface, increasing absorption and blocking access to the air. It speeds the healing of wounds (e.g., band-aids) and the action of a beauty treatment.

Stimulant: produces a temporary increase of the functional activity or efficiency of the skin.

Styptic: arrests external bleeding.

Tonic: something that invigorates and refreshes.

VEGETABLE OILS

Vegetable oil is the generic name for fatty oils extracted from the seed-bearing fruit of flowering plants. Vegetable oils can play a major role in natural skin care. They are used for the properties of their constituents—fatty acids,

vitamins, minerals, and other substances—and for their synergistic effects. This section begins with a general discussion of both fatty acids and how the production of oils affects their usefulness—highlighting the importance of unrefined oils—and follows with a description of individual oils.

Fatty Acids

The fatty acids are the constituents of vegetable oils most important for skin care. Fatty acids are the major components of fats in human bodies and are important sources of energy for the body. As the major structural components of cell membranes, they have an important function in the building and maintenance of healthy cells.

Fats exist in several forms, the principle ones being *triglycerides* and *phospholipids*. In addition, there are variations on the triglyceride molecule that are important for skin care: *diglycerides* and *monoglycerides*.

- Fats and waxes most commonly exist as triglyceride molecules. "Triglycerides are the main class of food fats[, making] up about 95% of all the fats we eat"[5]; they are the configuration of fat in vegetable oils, egg yolks, and animal fat. The chemical structure of a triglyceride molecule is one glycerol molecule with three fatty acid molecules, each attached to a carbon atom in the glycerol. In one triglyceride molecule, the three fatty acid molecules may or may not be identical.

- A diglyceride molecule has one glycerol molecule, two fatty acid molecules, and one OH molecule. A monoglyceride molecule has one glycerol molecule, one fatty acid molecule, and two OH molecules. Both diglycerides and monoglycerides are effective emulsifiers, with the latter being more hydrophilic than the former.

- Phospholipids are the second major class of food and body fats. "They are the major structural lipids of all organisms."[5] Their most important role is to form biological membranes, the "skin" of every living cell and organelle (a little organ found within cells) of every living organism. The chemical structure of a phospholipid molecule is similar to that of a diglyceride molecule: one glycerol molecule, two fatty acid molecules, and one phosphoric acid molecule.

The molecular difference between fats and waxes is the length of the carbon chains in the fatty acids. Fats have fatty acids with 4–24 carbon atoms. Waxes have fatty acids with more than 30 carbon atoms.

Fatty acid molecules are comprised of hydrogen, oxygen, and carbon atoms. The structure that varies and reflects the different fatty acids is the carbon chain in the middle of the molecule. It varies both in length and in the nature of the bonds between the carbon atoms. The carbon chain commonly varies in length from 4 carbon atoms (butyric acid, found in butter) to 24 carbon atoms (found in fish oils and brain tissue). Within the carbon chain, each carbon atom is also bonded to one or two hydrogen atoms. A single bond between two adjacent carbon atoms occurs when each carbon atom is linked to two hydrogen atoms. A double bond between two adjacent carbon atoms occurs when each carbon atom is linked to only one hydrogen atom. Fatty acids are often described in terms of the nature of the bonds between the carbon atoms: A fatty acid with all single bonds is called *saturated*, while one with at least one double bond is called *unsaturated*. A *monounsaturated* fatty acid has only one double bond; a *polyunsaturated* fatty acid has two or more double bonds[5].

The most important unsaturated fatty acids are those with 18 carbon atoms, among them the *essential fatty acids* (EFAs): linoleic acid (LA) and linolenic acid (LNA). They are called "essential" because they are critical to body metabolism and they are only available from external sources such as diet. LA has two double bonds, LNA has three; the latter is the most useful for the body. Essential fatty acids are sometimes called vitamin F.

Gamma linolenic acid (GLA) is another unsaturated fatty acid with 18 carbon atoms. GLA is not considered to be "essential" because it can be made in the body from LA—but only when there are sufficient amounts of vitamin B, zinc, magnesium, and insulin and when there is an minimal amount of trans-linoleic acid (an isomer of LA created by the high heat of refining or hydrogenation) which can block the transformation. Use of oils containing GLA

can be a helpful augmentation to the body's own production. GLA "increases the protecting function of skin cells and reinforces the skin as a protecting membrane. Research has indicated that GLA applied to the skin is incorporated into the phospholipid molecules. [It is] recommended in face oils for its rejuvenative power."

Oleic acid is the most important monounsaturated fatty acid for skin care; it has 18 carbon atoms like LA, LNA, and GLA. "It is the major fatty acid found in the [sebum] produced by the human skin glands."[5] "Studies have demonstrated that Oleic acid has unparalleled penetration power, capable of permeating deeply into the lower layers of the stratum corneum to greatly enhance the beneficial effects of collagen and elastin, i.e. rejuvenating cell growth to give skin support and flexibility. Oleic acid is known as an excellent transdermal carrier of cell rebuilding nutrients and bioactive compounds (collagen and elastin) into the skin to repair the damage caused by dryness, sun exposure and other factors. The result is restoration of the skin's elasticity, significant improvement in skin texture as well as elimination or remarkable reduction of fine lines and small wrinkles. " (per http://www.goldportbeauty.com/camellia_oil.htm)

Fatty Acid Profiles of Vegetable Oils

All vegetable oils contain mixtures of various fatty acids in unique proportions; this is called their *fatty acid profile*. The following table[5] presents the percentages of the most important fatty acids in the best vegetable oils. These percentages can be affected by the way in which the plants are grown, the soil in which they are grown, and the climate.

Vegetable Oil	*Percentage of Content*		
	Oleic Acid	*Linolenic Acid (LNA)*	*Linoleic Acid (LA)*
almond	60–86	0.1–1.0	7–30
apricot	55–70	1	25–35
avocado	55–75	0.1–2.0	9–17
black currant	?	13	47
camellia	82–88		8
castor	3	0.3	4.2
coconut	6		3
evening primrose	11		81
flax	19	58	14
grape	17		71
hazelnut (filbert)	54		7
high-oleic safflower	76		16
olive	76		8
pumpkin	34	15	42
rice bran	48		35
rosehip	16	39	41
safflower	13		75
sesame	42		45

Vegetable Oil	*Percentage of Content*		
	Oleic Acid	*Linolenic Acid (LNA)*	*Linoleic Acid (LA)*
shea butter	40–55	0	3–8
walnut	28	5	51
wheat germ	28		54

Quality Issues

The aspects of a vegetable oil that establish its quality are discussed here in priority order.

1. Fresh—not rancid

The freshness of vegetable oils should not be taken for granted. Essential fatty acids are sensitive and spoil easily. Cosmetics containing them have a shelf life of around six months at best, even when special stabilizing ingredients are used. There are two vegetable oils that have been used since antiquity and are traditionally unrefined: olive and sesame; they oxidize much slower than other oils and thus have a longer shelf life.

Learn to recognize the smell of rancid oil. All too often uncommon commercial oils like walnut oil are rancid when you buy them. Generally oils sold in clear glass bottles, if not refined, are likely to be rancid. Oil producers who are serious about the quality of their oils package them in dark brown glass or black plastic bottles.

2. Unrefined

Commercial production of vegetable oils begins with cleaning and hulling of the seeds after which the oil is extracted, by either expeller pressing or solvents. Expeller pressing at cool temperatures produces oils that are not damaged by their extraction. Solvent extraction leaves solvent residues in the oil.

The great bulk of commercial oils are refined. Refining is a multi-step process and includes degumming, bleaching, refining, and deodorizing. Degumming removes phospholipids, including lecithin, and some minerals and polysaccharides. Refining removes free fatty acids. Deodorization removes aromatic oils and more free fatty acids, also tocopherols (vitamin E) and phytosterols. The high heat—reaching 500° F—of deodorization transforms unsaturated fatty acids into many unnatural isomers called trans fatty acids, none of which are biologically equivalent to the original molecule. (Trans fatty acids have effects almost the opposite of that of the natural fatty acids; they act like saturated fatty acids and work against the effects of the EFAs; they are best avoided.) For supermarkets, synthetic antioxidants are added. Sometimes refined oils are also "winterized" so that they do not get cloudy in cold temperatures, and preservatives may be added.

You may encounter vegetable oils labeled "semi-refined." If you are seriously considering using these oils, do ask the manufacturer for the details of their refining. The ones I found were deodorized. Because that is the most damaging of the refining steps, I classify these oils as refined.

Chemical (solvent) extractions, heat, and refining damage—*even destroy*—an oil's essential fatty acids and vitamins; furthermore, chemical residues remain in the oil, some of which may be carcinogenic. Be aware that claims of "cold-pressed" and "cold-processed" do <u>not</u> mean mechanically pressed, although the processor would like you to believe that.*

* I have a rule of thumb that goes "if the answer isn't yes, it's no." Applied to vegetable oils, I conclude that if the label doesn't say the oil is mechanically expelled, then it isn't. Likewise, if the label doesn't say unrefined, then the oil isn't.

The purest oils undergo mechanical expeller pressing at cool temperatures and are **not refined**. These contain fatty acids, vitamin E and other natural antioxidant substances, vitamins, minerals; their essential fatty acids are intact. Unrefined oils tend to be darker in color and stronger in odor than refined oils. Because of their fragility, unrefined oils are sold in dark glass and plastic bottles; any oil, except olive oil, sold in a clear glass bottle is undoubtedly refined.

3. Organic

The quality of a vegetable oil is reduced by both the amount of synthetic chemicals applied as pesticides, herbicides, and fertilizer to the plants from which the oil is produced and the quality of the soil in which the plants are grown. Organically grown plants are the purest, most natural source of vegetable oil. Organic vegetable oil is available, but the selection is limited.

Choose the highest quality oils for skin and hair care

The factors I use to evaluate vegetable oils are, in priority sequence, fresh, unrefined, mechanically pressed, and organic. As a result I avoid any oil that is unrefined, go out of my way to find an oil that is mechanically pressed*, and count myself lucky if one is organic. I don't want to belabor the point, but a refined vegetable oil has no place in natural skin care.

How to tell the oil quality?

Start with the container. Is it clear or dark? Next read the label. Does it say "unrefined"? "organic"? "expeller pressed"? Lastly smell and taste the oil. As I said earlier, oil in clear containers, if it is not olive oil, is likely refined. If the label does not say explicitly that the oil is expeller pressed, unrefined, and/or organic then you must assume it is not. (Extra virgin olive oil is by definition expeller pressed.) You can tell if the oil is fresh by its odor and taste.

Fatty Acid Properties

Essential fatty acids have several properties that are pertinent to skin and hair care. Furthermore, they play several important roles in human metabolism—a properly functioning metabolism is requisite for healthy, attractive skin and hair.

1) They attract oxygen (when exposed to air they dry and harden).
2) They spread out in a very thin layer over surfaces (like your skin).
3) They help to disperse concentrations of substances which dissolve in these fatty acids.
4) They absorb sunlight, including UV, "through the skin and store it in the body in the form of chemical bonds."[5] Living tissue is capable of withdrawing energy from this store and using it to improve the energy balance of the organism and heighten the general sense of well-being. *Sunlight that cannot be stored because of an inadequacy of EFAs causes sunburn*.
5) They bond with sulfur-containing proteins becoming water-soluble in the process, which allows them to dissolve in blood.
6) They produce an electron cloud which, when it discharges in the body, activates and recharges living tissue.
7) They enable respiration—the physical and chemical processes by which an organism (such as you and me) supplies its cells and tissues with the oxygen needed for metabolism—a vital body function.
8) They play a vital role in cellular division, which is part of normal growth. A disruption of this growth accompanies the beginning of death.

Fatty acids, especially the EFAs, are very useful in skin and hair care. The primary ways for them to enter the body is through diet, but topical application is also effective: the skin easily absorbs vegetable oils containing EFAs (oleic acid is also absorbed, but less readily). EFAs combined with sulfur-containing proteins (cystine, cysteine, and methionine) achieve a synergy that is very beneficial to skin and hair. EFAs have been shown to help brittle nails and, with zinc, acne.

* Actually, I have never found an unrefined oil that was not expeller produced.

Vegetable oils are sometimes classified as drying, semidrying, and nondrying based on how quickly, if at all, the oil dries to a film after application to your skin. I like to use a drying oil in the daytime (strictly for appearances sake) and a nondrying or semidrying oil at night. You will develop you own preferences.

Drying oils dry slowly in the air to form a film. This effect is a result of their high percentage of unsaturated fatty acids (especially the EFAs) and low oleic acid; they include flax, jojoba, camellia, and most nut oils. They may be best suited for use with oily skins and for inclusion in a mix of several oils.

Nondrying oils, when exposed to air, remain liquid for a long time. They contain mostly saturated and oleic fatty acids and have little-to-no EFAs. Most nondrying oils are extracted from tropical plants: almond, castor, olive, shea butter, and cocoa butter. They may be especially useful for dry skin.

Semidrying oils are midway in effect between that of the drying and nondrying oils. They have some LNA and quite a bit LA and more saturated fatty acids. They include sesame and pumpkin. They may be more suitable for normal to oily skin.

List of Vegetable Oils

Almond oil is a good choice for a facial oil. In addition to the fatty acids quantified in the table on page 5 it contains palmitic acid (4–9%) and stearic acid (2.5%). It also contains glucosides, minerals, and vitamins and is rich in protein. It is often referred to as sweet almond oil. Almond oil "helps relieve itching, soreness, dryness, and inflammation."[13] It needs 15 minutes to be thoroughly absorbed. The oily film left on some skins can be removed with a cotton pad or by blotting. Almond oil will turn rancid eventually (so do not maintain a large unrefrigerated inventory). I prefer this oil for cleansing.

Apricot oil contains the key fatty acids as well as palmitic acid, stearic acid, and palmitoleic acid. It is a good choice for a facial oil. It is lighter in consistency than almond oil and doesn't turn rancid as fast. I use it in facial oils, especially eye oils. It contains vitamins and minerals. It is useful on "all skins, especially prematurely aged, sensitive, inflamed, and dry [skin]."[13]

Avocado oil is both an oil base and an active ingredient (when it is unrefined). It benefits parasitic skin damage and eczema, accelerates crusting and the skinning over of wounds, and stimulates hair growth. It is nice in a cleansing oil and shampoo. Avocado oil contains oleic, linolenic, and linoleic fatty acids; palmitic (12–20%), stearic (0.1–2.0%), and palmitoleic acid (2–10%); vitamins A, D, and E; minerals; lecithin; protein; and amino acids. In a blend of vegetable oils it is best limited to 10%.

Black currant oil contains LNA (13%), LA (47%), and GLA (17%). I mention it especially because I can get it in a bottle, whereas borage and evening primrose oils are usually found only in gelatin capsules.

Borage oil has more GLA (19–24%) than evening primrose oil or black currant oil. Its taste is mild, its odor pleasant. It is soothing to the skin, and reduces the skin's aging process and UV damage. Aubrey Hampton claims evening primrose oil is "harsh to the skin, while borage is soothing."[11] It is used for extremely stubborn dry skins.

Camellia oil is a good choice for both cleansing and nourishing oils; I've come to enjoy it as a skin cleanser and nourisher. "A few drops a day will help restore dry skin and produce a healthy, radiant glow. Camellia Seed Oil protects skin from damage due to harsh environments and preserves skin cells against scarring. It moisturizes for smooth and bright skin. It lightens stretch marks and age spots, while it also prevents freckles and wrinkling. It also protects skin from harsh UV[-B] rays." (per http://www.victani.com, a retailer). The Chinese oil has been highly regarded by the Chinese for thousands of years. In addition to oleic and LA fatty acids, it contains 9% palmitic acid, 1% stearic acid, and squalene and has been compared to olive oil. The Japanese oil has long been used for hair care in Japan, where it is believed to "stimulate the growth of hair follicles, promote healthy hair growth and in some cases restore hair loss." (per http://www.goldportbeauty.com/camellia_oil.htm)

The oil is pressed from the seeds of three different plants, all of which are sisters to the tea plant (*Camellia sinensis*).

- *Camellia oleifera* grows in 105 different counties in China, mainly in the provinces of Hunan and Jiangxi; the plants are grown organically. The oil is sometimes called "Chinese tea oil".
- *Camellia japonica* is grown and harvested in Japan.
- *Camellia sasanqua* is grown and harvested in Japan.

The plants are grown organically. At least some of the commercial oil is refined.

Castor oil has excellent lubricating and absorption qualities while being non-drying. It is emollient; on the lips it is glossy and prevents chapping for hours. Eighty to ninety percent of its fatty acid content is ricinoleic acid, an unsaturated fatty acid with 18 carbon atoms . It also contains linoleic, oleic, stearic, and palmitic fatty acids and glycerin. It is a viscid (thick) fluid, almost colorless when pure, and dissolves freely in alcohol* and acetic acid. Horrocks claims that "castor oil has very powerful drawing properties" and can bring a "large, boil-like pimple ..to a head by applying a dab of [the] oil night and morning." All that said, I rely on castor oil to deal with pimples: I dab it on zits and add it to facial oils, but I do not use it otherwise as it seems to reinforce wrinkles around the eyes. It has many medical uses, as described by Edgar Cayce[35]. It has removed keratoses (excessive growth of epidermal cells which may develop into squamous cell carcinomas), warts, and sebaceous cysts by the application of saturated compresses.

Cocoa butter is expelled by heavy heated rollers from the roasted seeds (beans) of the cocoa tree.† It is a super emollient that is solid at room temperature. It protects and softens chapped and/or dry skin, including lips; aids in the treatment of skin irritations; helps soften and erase (with other ingredients) wrinkles, particularly those occurring on the neck, around the eyes, and at the corners of the mouth. Mixed with coconut oil and other vegetable oils it makes a superior skin-softening suntan lotion. It can be used to firm up a blend of liquid vegetable oils (and make a lotion), but does not have the truly solidifying properties of beeswax. Unfortunately, in the absence of commercial emulsifiers, cocoa butter that has been added to a cream or lotion will turn granular within a few weeks, a quality that has deterred my use of it.

Coconut oil is the fatty oil extracted from the flesh of the fruit of the coconut palm tree. Coconut oil is classified as a saturated medium-chain triglyceride and contains 48% lauric acid. The standard commercial product is refined, bleached, and deodorized and "is made from dried, aged coconut known as copra."[38] Virgin coconut oil is extracted from fresh coconuts and is not refined. Virtually all brands of coconut oil can be considered organic because the trees are grown without chemicals, sprays, or pesticides. You can identify an oil from its melting point: Non-hydrogenated oil melts at 76° F, hydrogenated oil melts at about 96° F.

Applied topically, "pure coconut oil is the best natural skin lotion available."[38] It removes excessive dead skin cells, smoothes and softens the skin, strengthens the connective tissues, and promotes the growth of new, healthy tissue. As an effective sunscreen, coconut oil works, not by blocking ultraviolet light, but by allowing "the body to adjust naturally to sun exposure, naturally increasing the body's tolerance level over time."[38] Coconut oil, through its medium-chain fatty acids (MCFA), is antibacterial, antifungal, antiviral, and anti-parasitic. Coconut oil can completely relieve mild inflammation, both internal and external. Coconut oil can be used to condition the hair and remedy dandruff.

Topical applications are quickly absorbed. But "if you apply too much oil all at once the skin becomes saturated and will not absorb it all. This will leave a greasy film. So it's best to apply a small amount and reapply it as often as necessary."[38]

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* It is my experience that 100 proof vodka (50% alcohol) emulsifies but does not dissolve castor oil in a 3:1 solution (vodka to castor oil). Shaking does activate the emulsion but the two separate within minutes.

† The word "cocoa" is an anglicized form of the Spanish cacao, which was a derivative of the native South American word for the beans. Cocoa was introduced to Europe in the 1500s.

It gives a smooth consistency and luxurious feel to cosmetic preparations. I like it as a bath oil. Coconut oil is firm at "room temperature", and can thicken a vegetable oil blend—limit it to about 10–15% if you don't want a cream. I like it in a body oil as about 1/6th of a blend—it leaves my skin feeling moist. And I like to use it by itself.

Evening primrose oil is high in one essential fatty acid (LA) and contains 10% GLA. It has many medicinal qualities, some of which can be realized through topical application. In a shampoo it moisturizes dry hair and scalp and reduces the excessive flow of oils without drying out the hair. Sprayed on hair it gives a non-greasy luster. Combined with essential fatty acids in a natural cream base it is a light skin moisturizer. It alleviates eczema and maybe psoriasis. It can be irritating to some people so small amounts are advised.

Flax oil, when fresh and unrefined, has all the essential amino acids in good balance. It is rich in lecithin and other phospholipids. It has carotene (pro vitamin A), vitamins B1, B2, C, D, E. It also contains almost all known major and trace minerals. It is the best source of EFAs for face and body oils. In Europe it is used in high quality suntan and skin care oils. It has a shelf life of about 3 months if kept refrigerated, 12 months if kept in the freezer.

Grapeseed oil contains vitamins, minerals, and protein and can be used on any skin It is generally made in France and is likely to be solvent extracted. Also, because the seeds are hard, it requires "fairly intense heat to express the oil."[5] As a result most of its benefits are lost.

Hazelnut oil contains vitamins A and E. It is not greasy. It is in vogue these days and can be found in commercial cosmetics and by itself.

Jojoba oil is more of a polyunsaturated liquid wax than an oil*; it is pressed from the seeds of the jojoba shrub, a plant indigenous to the American southwestern desert, Sonoran desert in Mexico, Argentina†, and the Middle East‡. It has an "unsurpassed effect on hair and skin"[11]. I find that this description applies to young hair and skin; now that I'm older, I find it lacking. There is evidence that it is a good acne treatment: it reduces excessive oiliness, dissolves the excess deposits of sebum, reduces skin bacteria, and reduces inflammation. A hot oil scalp treatment benefits hair loss and greasy hair with dandruff. It lubricates the hair shaft without a greasy feeling. It helps prevent split ends and is helpful for permed and over-processed hair. Jojoba is nice in a facial oil because it is quickly absorbed by the skin, leaving no residue but a light, silky sheen. Similarly, it is nice as a body oil. It is a helpful ingredient because of its "remarkable resistance to oxidation and rancidity"[11]: it slows product deterioration and is especially useful in cosmetics that are used up slowly. Jojoba oil has been in commercial production in the USA since 1973.

There are conflicting reports of the constituents of jojoba oil. One claims jojoba oil contains straight-chained C20 and C22 fatty acids and alcohols with two unsaturated bonds (making the oil polyunsaturated). Another claims it contains myristic acid. A third tocopherols (vitamin E). A fourth at least 50% insaponifiables. A fifth claims its fatty acids and alcohols have an average total carbon chain length of 42 carbon atoms. A sixth claims it is not a triglyceride because it contains more than three fatty acids. It's possible that the oil varies grown in different areas. Many agree it will not turn rancid.

Olive oil is often recommended for hair treatments, baths, and skin cleansers. Its use has been traditional since antiquity. It is commonly found unrefined and is stable at room temperature.

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* What this means is that this is a vegetable oil whose fatty acids have long carbon chains (more than 30 carbon atoms) with at least two double bonds.

† I do not know if jojoba is indigenous to Argentina, but it currently grown commercially there.

‡ It is being grown in Egypt for use as a fuel.

Pumpkin oil is excellent for skin, both internally, when eaten, and externally. Most of the fat content is LA and oleic acid. It also contains LNA and palmitic acid. It is the saturated fats that solidify when the oil is refrigerated; be careful to include them when eating the oil or making skin oils. Applied topically by itself, it leaves the skin feeling soft, a little moist, and smooth, a feeling that persists for some time.

Rosa Mosqueta is a pink-flowered rose that grows in the southern Andes. Oil from the seeds of its fruit (rose hips) has been shown to heal burned skin and rejuvenate burned skin tissue, especially damage resulting from radiation treatment and UV radiation, and scar tissue, including acne scars. It can be helpful in moisturizing and rejuvenating cosmetics, especially for skin that is very dry, prematurely aged, or UV damaged. It is not advised for oily and/or acne skin. I shun it as it irritates my skin.

St. John's wort oil is obtained by macerating the flowers in vegetable oil. It is an aromatic, an astringent, reduces inflammation, and soothes nerves. It has many medicinal qualities. In skin care it is helpful for sensitive and/or allergy-prone skin. Mixed with shampoo herbs it cleanses the scalp. In a blend of vegetable oils it should be limited to 2.5%. It is popular in Europe, but I hesitate to use it because of my concern about the quality of the base vegetable oil.

Sesame oil is useful as a skin cream base because it best resists spoilage. It has a medium sun-protection filter (it blocks about 30% of UV rays and is rated with a SPF of 4), and is useful in sun-tan products. It is likely that the known sun screening capability of sesame oil is due to the fact that it is the only vegetable oil (other than olive oil) that is not routinely refined. Thus its EFAs are intact to provide their sun absorption benefits.

Shea or karite butter comes from a tree which grows in west African savannahs. The butter is extracted from the kernel or nut. It is composed of 50% triglycerides and 7% waxy esters; it contains oleic acid, stearic acid, palmitic acid, linoleic acid, vitamins A and E, B-amyric (an anti-oxidant agent), and other substances. It is solid a room temperature and melts at 95–109° F. Its properties include: moisturizing, softening, regenerative (cytophylactic), nourishing, stimulates collagen production, barrier agent, emollient, restores elasticity, thickener, anti-inflammative, reduces body stiffness. It's easy to see why the locals call the tree the Tree of Life (they also eat the fruit). Applied topically, it is good for skin that is dry, wrinkled, sunburned, scarred, itching, discolored, rash, chapped, irritated, or has eczema, dermatitis, or stretch marks. As a massage balm it is effective in relieving muscle stiffness, rheumatism, arthritis. It protects against sunburn from UV radiation* with a SPF of 6. It leaves the skin soft and non-greasy. In a hair conditioner, it treats hair damaged by chemicals (such as dye, chlorine, permanent wave solution, and sea salt), hair dryers, and corn-rowing. It can be used as hair dressing to moisturize a dry scalp and stimulate hair growth. It can be used as a pomade to hold a hair style and lightly relax curls. I love shea butter straight on my lips, cuticles, and wrinkles and combined in skin oils and creams. I also like to apply a small amount to my hair† before and/or during blow drying; the shea butter melts into the hair, makes it silky, and smoothes any frizziness.

Walnut oil is useful as a hot oil treatment for dry and dandruffy hair. I like it in shampoos and as the main ingredient in skin nourishing oils.

Wheat germ oil is a great source of vitamin E and octacosanol. The fundamental physiological significance of vitamin E (mixed tocopherols) is that it is an antioxidant, and therefore a preservative. In addition (and as is true for all unrefined seed oils), wheat germ contains the ingredients necessary for the development and growth of a new plant in a naturally balanced complex; it also contains several biologically active substances as well as phospholipids and phytosterol. It is an ideal ingredient in a cellular improvement cream. It smoothes the skin and prevents the loss of moisture. Also, it treats and strengthens dry and split hair when massaged into the split ends and left on for

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* Use in sun protection cosmetics as 5–10% of total ingredients.

† I apply the shea butter by rubbing about ¼ to ½ teaspoon worth between the palms of my hands to soften it, then pat my hands on my hair. The hair will be a little sticky, but if it gets very sticky, you've used too much shea butter. Best to start with the smallest amount until you become familiar with this process. If you use too much shea butter, just shampoo it out.

about 15 minutes before shampooing. Because of its strong odor, it is recommended that it comprise no more than 10% of a blend of vegetable oils (used on the skin). Be sure to choose an unrefined oil (or you will miss out on its preservative properties).

HERBS

Herbalism is the name for the knowledge and study of herbs. The word *herb* is more reflective of the use to which a plant may be put than the actual type of plant that it is. Plants have uses as medicines, cosmetics, seasonings, beverages, dyes, and aromatics (as in potpourris). "Historically, .. plant remedies represent the most continuous and universal form of [medical] treatment. In fact, .. the household uses of simple herbal remedies .. is based on [a] tradition that probably stretches in an unbroken line to prehistoric times."[25]

The first known herbal was written in China about 2700 BC. The first European herbal was compiled by the Greek physician Dioscorides in the first century AD and remained an authoritative reference for 1600 years. The invention of the printing press led to the publication of hundreds of herbals. The great popularity of herbals and the "preeminent position held by plants as sources of therapeutic effects" began, in the seventeenth century, to be eroded by the introduction of active chemical drugs and eventually, through the development of chemistry and the other physical sciences, "the dominance of chemotherapy—chemical medicine—as the orthodox system of the twentieth century."[25]

Regardless of the ascendancy of chemotherapy, the usefulness of herbs remained constant. Western medicine countered by labeling herbalism *folk medicine*. Recently chemotherapy has been challenged by an ongoing parade of effective alternative medicines: homeopathy, naturopathy, acupuncture, etc. Their underlying belief is in natural healing, and they rely on simple herbal remedies.

Herbs can play an important role in natural cosmetics. They can be used to cleanse and nourish skin and hair as well as to treat various conditions. Of the more than 500 western herbs, less than 40 are commonly available and known to have cosmetic benefits.

Because it is rare for any two plants to produce exactly the same results in/on the body, "it is desirable to formulate a mixture of herbs to minimize such variations and compensate for the undesirable properties."

Herbal Extracts

Herbs are commonly used in the form of extracts. Some extracts can be prepared at home, like infusions, while others are usually prepared commercially, like tinctures. Your choice of an herbal extract must be appropriate to "the identity of the plant, the plant parts being used, the elements to be extracted (if any), the form in which the remedy will be taken or applied, and the effect to be achieved."[25]

Water extracts

Water extracts (called herbal water in this text) must be used when they are fresh.*

❒ *Infusions* are helpful when you want to retain and use the vitamin and volatile constituents of the plant. Fresh or dried herbs, especially leaves or petals, are steeped in just-boiled water for 10–15 minutes, then strained.† The following quantities of herbs (dry weight) are based on one pint (by volume) of water:

Strength	Dried Herbs	Fresh Herbs
weak	0.5 oz	1.5 handfuls

* The strength of 1 oz. of water extract made from one part dry herb in 32 parts (by volume) of water is the equivalent of 1 gram of herb.

† I strain infusions in two steps. First a mesh strainer, followed by an unbleached paper coffee filter. This removes all particles of plant material.

normal	1 oz	3 handfuls
strong	2 oz.	6 handfuls

❒ *Decoctions* are used for the parts of plants that are hard and woody, like roots, stems, bark, and seeds. The preparation extracts the mineral salts and bitter principles. Fresh herbs, cut into small pieces or ground, are placed in cold water (about one ounce of plant material per pint of water), brought to a boil, and boiled for 3–4 minutes, then steeped covered for 2–3 minutes. Hard parts of herbs are placed in cold water and simmered covered for about 10 minutes, then steeped covered about 15 minutes. The decoction is strained.

❒ *Cold water extracts* preserve the most volatile elements and fragile water-soluble vitamins while extracting only minor amounts of mineral salts and bitter principles. Using about twice as much plant material as for an infusion, cover the herb(s) with cold water, cover the container, and let stand for 8–12 hours. Strain.

Alcohol extracts

Alcohol extracts can be kept on a cool, dark shelf for up to 10 years. Ethanol (ethyl alcohol) is the most thorough solvent: it extracts all plant constituents that contain water, leaving only cellulose and dead tissue.

❒ *Tinctures* are more concentrated than water extracts. The herb is steeped in a spirit (ethanol or, if doing this at home, 100 proof vodka) for 14 days, then strained; press as much of the liquid out of the sediment as you can (the remnant moisture is nearly full strength tincture). Mix 1–4 oz. herb, depending on the plant's potency, with 8–12 oz. alcohol in a covered jar. Shake once or twice a day while the herb is steeping.

❒ *Fluid extracts* are by definition 1:1 in strength, meaning that 1 oz. of fluid extract contains the equivalent of 1 dry oz. herb. Because their preparation is involved, it's best to use commercial products.

Tinctures are especially useful for cosmetics because of their longevity and the ease by which they can be incorporated into products. They can be added to other liquid ingredients, such as aloe gel and floral waters. They can be added to fats to make creams and balms.

Vinegar extracts

Vinegar extracts can be kept on a cool, dark shelf for up to 10 years.

❒ Vinegar extracts are similar to tinctures and are made the same way—just use apple cider vinegar instead of alcohol. They have the benefit of including the alphahydroxy acids of vinegar and lack the drying effects of alcohol.

Glycerine extracts

Glycerine extracts can be kept up to two years if refrigerated.

❒ *Glycerites* are made in the same way as tinctures, but with vegetable glycerine instead of alcohol. Glycerine is not as thorough a solvent as alcohol, but its extracts are useful to people (and animals) who cannot tolerate alcohol.

Fat extracts

Fat extracts can be kept until the oil deteriorates.

❒ *Oil extract* is used to incorporate the volatile elements in an herb for long keeping and/or inclusion in skin oils and creams. Begin by preparing a water or alcohol extract. Add the strained herbal water to vegetable oil(s) and simmer gently until the water/alcohol has completely evaporated; do not allow the temperature to exceed 300°F or the EFAs will be damaged.

❒ *Oil infusion* is an extract of an herb's oil-soluble constituents in an oil base. It is easily made and can be kept in the refrigerator for up to one year. You can add it to skin oils and creams. Begin by completely covering the herb

with olive oil in an air-tight glass jar. Allow it to steep in a warm location for at least one month. Then strain the mixture with a fine sieve, and store the infused oil in an air-tight glass jar.

Alternatively, combine the herb and oil in a pot, heat uncovered for one hour, never letting the oil temperature exceed 200° F. Strain and bottle the oil.

❒ *Maceration* is done by saturating oil or fat with chopped/bruised leaves or flowers. Macerate 2 oz. dried herb or 4 oz. fresh herb using a mortar and pestle, then combine herb with 2 cups vegetable oil. Let steep covered in a warm place for 3 days. Strain and bottle the oil.

List of Herbs

Aloe is an invaluable and indispensable skin care ingredient. It is a succulent of the lily family. While there are more than 200 varieties of aloe, the ones with the skin care benefits are the *Aloe vera* (whose official botanical name is *Aloe barbadensis*) and the *Aloe arborescens*; the two seem to have the same benefits. Aloe gel is 96–99.5% water, the remaining material contains 75 known constituents: amino acids, enzymes, hormones, lignin, minerals, vitamins, salicylic acid, saponins, sterols, and sugars—monosaccharides and muco-polysaccharides (MPS). Aloe gel has been used since antiquity as a medicine and a cosmetic. It is analgesic, demulcent, antiseptic, bactericidal, cleansing, cytophylactic, detoxicant, emollient, healing, moisturizing. Aloe gel can penetrate the top two layers of the skin.

Aloe gel is excellent on burns because it relieves pain and prevents blisters and redness. It protects skin from damage by x-rays. It relieves the itching of insect bites and allergies. It increases the availability of oxygen to the skin and increases the synthesis and strength of tissue. It heals psoriasis lesions. It is useful in most cosmetics.

Traditionally the gel was obtained by filleting the leaf and scraping out the gelatinous pulp. In recent years a "whole leaf" product has been obtained from the pulverized whole leaf. The gel is blended with stabilizers and preservatives, and then bottled. One measure of quality is the IASC (International Aloe Science Council, Inc.) Certification seal. The concentration of MPS expressed as milligrams per liter is another indicator of quality. MPS concentration is highest in whole leaf products.

The commercial product is effective for about six weeks after opening. Be aware that the preservatives and stabilizers used in commercial aloe gel, as well as the heat used to process it, reduce, <u>even block completely</u>, its innate effectiveness and may make it allergenic.

The best source of active aloe gel, especially when there is a medical emergency, is a leaf just cut from a plant grown in your garden. It should be used within 15 minutes, because one especially useful active constituent becomes inert after that time.

Anise seed is useful "in facial steam to open and medicate the pores. It is also very useful in hair rinses for its color, cleansing action on the scalp pores, and wonderful scent."[7]

Arnica flowers can be used as a hair rinse with Nettle to stimulate hair growth.

Burdock treats skin diseases and an extract of the seeds restores "smoothness to the skin which is a sign of normal healthy skin".[1] It can be used as an external wash for ulcers and scaly skin disorders. A tincture and "a fluid extract" are of benefit to chronic skin diseases. It has an anti-microbial effect; purifies-cleanses the tissues and blood—in facial steam it affects both the oil and sweat glands. "A lotion of the leaves or root massaged into the scalp is good for falling hair."[14]

Calendula* flowers stimulate the formation of new tissue, their toning and anti-inflammatory properties soothe the skin, and they gently promote blood circulation.[11] It is also cleansing and astringent. In a hair rinse, it enhances the color of yellow and light red hair. "The flowers are current in the British Herbal Pharmacopoeia [as] specific for..sebaceous cysts.."[20] A fresh bruised petal can be applied directly to a pimple or acne cyst for two minutes; repeat occasionally—the pimple should heal overnight.

Celery tops are useful in facial steam where they act as a tonic and give tone to older skins.[7]

Chamomile is cleansing, cooling, lightening, anti-inflammatory. It is the only herb which really lightens fair hair. It contains a non-volatile oil called apigenen which gives light hair a lighter yellow tone. A facial steam will reduce puffiness of the skin and cleanse the pores of impurities; it also helps to strengthen the tissues.[7] Helpful for acne. The two most common chamomiles are:

Roman - *Anthemis nobilis*, also known botanically as *Chamaemelum nobile*
German - *Matricaria chamomilla*, also known botanically as *Matricaria recutita*†

Cleavers, in an infusion applied to the skin, is said to clear the complexion and can also be used as a hair rinse to treat dandruff. It is claimed to make a reliable deodorant.

Coltsfoot contains mucilage, silica, and cystine (the most prominent amino acid in hair). Coltsfoot is used in shampoos and hair conditioners, where it benefits the elasticity and strength of the hair. Its sulfur content (26%) "promote[s] blood flow in the scalp" which benefits dandruff.[11] Its silica content "encourages the formulation of collagen fibrils"[11], so that in a lotion or cream it benefits skin in the same way as soluble collagen. It is commonly used in conjunction with horsetail, which has similar effects. Coltsfoot is emollient, astringent, and tonic. "It is very soothing for any inflammation of the skin and is particularly useful in the treatment of thread veins..applied as a tepid compress [using a weak infusion]."[9]

Comfrey is one of the most useful plants in herbal cosmetics or medicine. Both the fresh and dried root and leaf can be used. Its active constituent is allantoin, discussed in section "Other Ingredients". Comfrey "is a cell proliferant and cell regenerative and, with continuous use, regenerates aging tissues."[7] It can be used in lotions, creams, vaginal douches, hair rinses and shampoos, and just about anything else you can think of. It is both emollient and astringent. It is especially valuable in bath herb mixtures. A decoction of the root is more emollient (and thus more conditioning) than an infusion of the leaves.

Echinacea helps support the body's defensive powers and helps regenerate cellular tissue.

Goldenrod is useful in facial steam for its astringent and diaphoretic qualities. In a shampoo or rinse it gives hair nice highlights, especially for blond hair.[7]

Henna is a natural hair conditioning ingredient. There are three classes: red henna (two varieties), black henna, and neutral henna. A color rinse of henna will bring out highlights on dark hair. Henna is effective in a conditioning rinse; it works best on oily or dry hair with a tendency to gain oiliness as the day progresses. The coloring agent can be removed so that it will condition without coloring. Henna is the only widely-available semi-permanent hair coloring that is non-toxic. Its main drawbacks are that it requires experience to predict the way it colors, and that it produces a limited range of hair colors.

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* *Calendula officinalis* is called pot marigold by gardeners and should not be confused with *Tagetes*, whose common name is French marigold.

† Botanists continue to regroup plants into family, genus, and species; hence, over time, a plant can have more than one botanical name, the latest reflecting the most recent thinking on the characteristics of the plant and the group to which it belongs.

Horsetail contains silica (up to 70%), cystine, and sulfur. It has benefits to skin and hair that are shared by coltsfoot (and described there). "Horsetail..is a skin and nail tonic. It may be used on the face, and will restore skin tone after an illness."[9]

Lavender is one of perhaps the three most useful herbs (Rose and Comfrey being the others). It is antiseptic and stimulating. Good for oily hair. The dried plant is added to baths and facial steam to stimulate the complexion, cleanse the skin, and act as an aromatic astringent; it can be mixed with Rosemary, Comfrey, and Rose. It is used more extensively as an essential oil and floral water.

Lemongrass is used in bath herbs, facial herbs, and hair rinse herbs. It helps normalize overactive sebaceous glands, and is good for dry and oily skin, dandruff, and related skin problems. It contains vitamin A.

Licorice root "has a unique and potent use in facial steaming herbs as it is emollient and soothing and opens the pores so that other herbs can medicate and clean them out. A good formula for steaming herbs is Licorice root, Comfrey root or leaf, and medicating herbs such as Chamomile or Lavender."[7]

Marshmallow root contains pectin, iron, albumin, lecithin, enzymes, and other constituents which treat and soothe both the physical and emotional trauma connected with acne.[19] It is "healing and emollient because it contains much mucilage. It is combined with other herbs..in lotions and creams to moisturize the skin."[9] Good for dry hair. You can make a decoction by boiling ¼ pound of dried roots in 5 pints water, reduce to 3 pints, then strain.

Myrrh is an anti-microbial and "helps stimulate the body's natural immune powers—the white cells of the blood. Use as a gargle for mouth problems: .. gingivitis, .." Apply topically to cold sores in their early stages. For gargle, dilute ½ tsp. of a tincture to 3 T. warm water. Apply to broken skin in the same dilution, "use full strength on unbroken skin".[6]

Oats are soothing and healing; they contain sulfur. Cooked oatmeal put into a loose cheesecloth bag and added to the bath water makes a soothing liquid for itchy skin or skin with numerous insect bites. Oat flakes powdered (in a food processor) to a medium fine grit can be mixed with honey to make an excellent facial scrub. Powdered oat flakes mixed with water, yogurt, milk, or any other liquid are excellent as a facial mask, especially after herbal steam. Oatmeal with almond meal and honey is a good skin softener, and when rubbed into the hands, it cleans, softens, and protects. Oatmeal is added to soaps for cleansing.

Peppermint is stimulant and astringent. Mixed with Rosemary and vinegar it is a wash for dandruff. A strong infusion is used for chapped hands, especially when mixed with almond meal. Terrific in bath herb mixtures as stimulating restorative, as medication for the pores in facial herbs, and many other uses.

Raspberry is a stimulating astringent, useful in hair rinses and bath herb mixtures. With Comfrey and Licorice it makes an excellent herb for facial packs and steams for oily skin.

Rosemary is "cleansing, stimulating, and restorative..to be used on the body..[,] the hair, as well as being deodorant, a mouth wash, and a bath herb."[9] It is good for all hair, and especially helps dandruff, scurf, and poor hair growth: "An infusion of the dried plant (both leaves and flowers) combined with borax and used when cold, makes one of the best hair washes known. It forms an effectual remedy for the prevention of scurf and dandruff."[1]

Seaweed is a name applied to three classes of algae that live in seawater: red, green, and brown. The red algaes include *Dulse*, Irish Moss (also called Carragheen), and Agar-Agar; the latter two, when processed, yield translucent gels, the firmer of which is from Agar-Agar. These gels can be used to thicken cosmetics. Irish Moss "is a soothing emollient in cosmetics, and acts as a stabilizer and emulsifier in creams."[9] Kelp is a group of brown algae which includes *Laminaria*, *Fucus*, and others. The concentration of trace nutrients in seaweed is 10 times greater than

that of land-grown herbs, making them especially nourishing to human skin. Brown seaweeds are known to heal skin and body tissues, including heavy metals and cancer (see writings of Ryan Drum, Ph.D.).

Soap bark is the inner bark of *Quillaja saponaria*, a large evergreen tree native to warm temperate central Chile north to Bolivia and Peru. The soap bark tree has a long history of medicinal use with the Andean people who used it especially as a treatment for various chest problems. When the inner bark is reduced to powder, it is employed as a substitute for soap, since it forms a lather with water, owing to the presence of a glucoside saponin, sometimes distinguished as Quillaia saponin. Soap bark is used in its native country for washing clothes, and in this country is used by manufacturers and cleaners for washing or cleaning delicate materials. Powdered soap bark is readily soluble in water. Its aqueous solution foams upon shaking. For washing hair: powdered soap bark, 100 parts; alcohol, 400 parts; Bergamot EO, 20 drops; mix. It is said to promote the growth of the hair.

Soapberry is the common name for any of about 15 shrubs and small trees that comprise the genus *Sapindus*. They are native to tropical areas, chiefly in the Americas, but are also cultivated in subtropical areas. The leathery berries have pulp that is rich in saponin (37%) and lathers like soap.

Soapwort, also known as Bouncing Bet, is a perennial that is native to Europe and western Asia and is naturalized and widespread in North America where it commonly grows along roadsides and in waste areas. The sap of the plant is rich in saponin, a substance that foams in water and cleans like soap. A decoction of the fresh leaves and, to a lesser extent, the roots is an astringent green soapy solution. It is useful for cleaning old or delicate fabrics—it restores old fibers and vegetable dyes to their former strength and clarity.

Stinging Nettle is astringent and especially valuable for hair. It is an excellent hair conditioner, promotes a healthy gloss, and has a reputation for arresting hair loss. It helps scalp circulation "to promote healthy hair growth." Apply an infusion of the leaves daily directly to scalp "to improve hair and scalp conditions".[6] Used in a hair rinse it can eliminate dandruff. For shiny, glossy hair, make an infusion of Nettle and Rosemary, brush into the hair, and rub into the scalp every day. Nettles are also useful in treating eczema. Because fresh nettle leaves and stems sting, it's best to buy it as a dried herb or tincture.

Thyme is aromatic, antiseptic, diaphoretic, stimulant, tonic, refreshing, disinfectant. Good for all hair. Mixed with Comfrey (emollient), Lavender (astringent), and Mint (aromatic), it makes a great bath herb that smoothes and soothes the skin. Mixed with Comfrey and Licorice it is useful as a facial pack or steam for problem skin.

Violet is cleansing, soothing, gently astringent, and emollient. Infusions are very nice on the skin.

White Birch: The oil extracted from the buds or bark has been used externally in lotions to treat psoriasis and eczema. A decoction of the bark is also good for eczema, skin eruptions, pimples. In the bath it is detergent and astringent. In hair rinse it helps dandruff and other scalp disorders.

Wild Black Cherry has bark that is astringent and tonic. According to Jeanne Rose [7], it is also a hair conditioner. The bark loses its properties when boiled or kept longer than a year (in contrast with some woody herbs).

Witch Hazel has bark and leaves which are styptic, cleansing, and astringent. An infusion is an effective wash for the skin as an aftershave, rinse, and for stings or sunburn. A decoction of the bark is used for inflamed skin and as a dandruff wash. As a skin tonic, it tightens loose tissue and is an effective astringent tonic for red veins on the nose or face. The extract is used for general all-around skin care. A distillate, to which alcohol has been added as a preservative, is available commercially. In the section on cosmetics, whenever Witch Hazel is specified, you may use either an infusion, a decoction, the distillate, or a floral water.

Yarrow is cleansing, toning, styptic, and promotes sweating. It is cleansing in facial mixtures. Mixed in shampoos and hair tonics it stimulates hair growth, eradicates dandruff, and eliminates unhealthy scalp conditions. Horrocks states it "may cause photosensitivity".[9]

Yellow Dock is a mild astringent and detergent, and is used in bath herbs and in facial washes for skin eruptions or diseases or freckles.

Yucca juice is a liquid extracted from the root and stalk of the *Yucca schidigera* plant. It is produced in Mexico (indigenous desert plants are protected in America). It contains saponins and is very bubbly. It can be used in shampoo and maybe bubble bath. Yucca is a potent anti-oxidant, anti-inflammatory, anti-irritant, anti-bacterial, and anti-fungal.

Skin Care Properties of Herbs

Herb	*Cleanser*	*Depurative*	*Tonic*	*Astringent*	*Antiseptic*	*Healing*	*Calmative*	*Anti-inflammatory*	*Emollient*	*Moisturizer*	*Oil Regulator*	*Stimulant*	*Cell Regulator*	*Rejuvenator*	*Especially Good For*	*Other Properties*
Aloe						■			■	■			■	■	burns, cuts, wounds, acne	
Anise	■														facial steam	
Arnica										■		■				
Burdock	■	■				■	■			■					irritated skin	smoothing
Calendula				■		■		■	■			■			irritated skin	
Celery			■												older skin	
Chamomile	■				■	■		■	■	■					facial steam	
Coltsfoot			■	■					■						strengthening skin	
Comfrey				■	■	■			■				■	■	emulates collagen	
Echinacea		■			■	■							■			
Goldenrod	■			■			■					■				
Horsetail			■	■											strengthens skin	
Lavender	■			■	■							■			facial steam	
Lemongrass											■					
Licorice							■		■						facial steam	
Marshmallow						■			■	■						
Peppermint				■	■							■				cooling
Raspberry				■	■							■			facial steam	

Herb	*Cleanser*	*Depurative*	*Tonic*	*Astringent*	*Antiseptic*	*Healing*	*Calmative*	*Anti-inflammatory*	*Emollient*	*Moisturizer*	*Oil Regulator*	*Stimulant*	*Cell Regulator*	*Rejuvenator*	*Especially Good For*	*Other Properties*
Rosemary	■		■	■								■				
Stinging Nettle			■	■	■							■				
Thyme					■							■				
Witch Hazel	■		■	■												styptic
Yarrow	■		■	■												styptic
Yellow Dock	■			■											skin eruptions	

Hair Care Properties of Herbs

Herb	*Cleanser*	*Detergent*	*Tonic*	*Astringent*	*Stimulant*	*Anti-inflammatory*	*Healing*	*Emollient*	*Regenerating*	*For Shampoo*	*For Rinse*	*For Conditioner*	*Hair Growth*	*Dandruff*	*Oily*	*Especially Good For*	*Other Properties*
Aloe							■	■	■	■	■	■		■		seborrhea	
Anise Seed	■										■						color, scent
Arnica											■		■				good with Nettle
Burdock											■	■	■				hair manageability and gloss
Calendula	■		■	■		■					■						color-red and light red
Chamomile	■					■				■	■						color-blond, cooling
Cleavers											■			■			
Coltsfoot			■	■				■		■		■		■			strength and elasticity, soothing
Comfrey							■		■	■	■	■				damaged hair, seborrheic dermatitis	soothing
Goldenrod										■	■						color-blond
Henna											■	■			■		color, drying
Horsetail			■	■				■		■		■				s/a Coltsfoot	s/a Coltsfoot
Lemongrass											■			■	■	dry hair	
Marshmallow							■	■				■				dry hair	

Herb	*Cleanser*	*Detergent*	*Tonic*	*Astringent*	*Stimulant*	*Anti-inflammatory*	*Healing*	*Emollient*	*Regenerating*	*For Shampoo*	*For Rinse*	*For Conditioner*	*Hair Growth*	*Dandruff*	*Oily*	*Especially Good For*	*Other Properties*
Peppermint				■	■						■			■		with vinegar and Rosemary	cooling
Raspberry				■	■						■						
Rosemary	■				■					■	■		■	■		scurff	detangler
Stinging Nettle				■							■	■	■	■		hair loss, eczema	adds gloss
Thyme			■		■						■						
White Birch		■		■							■			■			
Witch Hazel	■			■						■	■			■			
Yarrow	■		■							■	■		■	■			

Essential Oils

Essential oils are aromatic volatile oily substances produced by some plants. They "are whole, organic substances in themselves"[12], the most concentrated of plant extracts, and the most concentrated form of herbal energy. Essential oils are used in cosmetics, medicine, and perfumery. They can effect the body, mind, and spirit; at the biological level they strengthen the natural defenses of the body. They are primarily taken into the human body in two ways—their vapor is breathed and they are absorbed by the skin; they are rarely ingested.

Aromatherapy is the name given to the study and use of essential oils. Essential oils have been known of since the ancient Egyptians and perhaps earlier. In 1975 an archaeological expedition to Pakistan led by Dr. Paolo Rovesti found evidence that essential oils were distilled by the ancient Indus Valley civilization as early as 3000 BC. Aromatherapy was named and formalized in 1928 by the publication of a book titled *Aromathérapie* by the French perfumer and chemist René-Maurice Gattefossé; by recounting the therapeutic work done with essential oils, it extended the recognition of the value of essential oils to a wide audience and encouraged further study.

Essential oils are stored in specialized plant cells. Different plants store their essential oil in different locations: flowers, leaves, stems, fruits, fruit peel, seeds, roots, wood, bark, or resin. Essential oils (EOs) are extracted in several different ways. Citrus oils are *pressed* from the peel. Some oils are *extracted* with volatile solvents, usually because that is the only effective technique. Fine blossom oils were traditionally absorbed by animal fat in a process called *enfluerage*. Most oils today are *distilled* from the plant material; this is the oldest, most gentle, and least expensive technique, and yields the purest oils.*

"Cellular regeneration is the key to a youthful skin, and essential oils provide a way of doing this which is far more pleasant than the most recent methods which involve fetal cells. The nutrients and proteins in essential oils help to maintain the mattress-like bounciness of collagen, upon which the outer layers of skin rest, and encourage the regeneration of new cells. The circulation-stimulating properties of the oils oxygenate the blood which in turn energizes the cells, allowing regeneration to take place. Some oils do this particularly well. Other oils such as fennel contain hormonal-like properties, and these encourage the firming of the skin, giving it a more youthful appearance."[13]

In addition to facilitating cellular nutrition and reproduction, most oils are antiseptic and have more than one of the dermal properties itemized in the section "Properties and Effects Related to Skin and Hair Care". There are EOs to benefit all skin types and conditions. Their effectiveness is based on their *vital force* and their *naturalness*. A synthetic or adulterated EO will not deliver the cosmetic or health benefits available in a pure oil.

You can experience the vitality of essential oils by placing three drops of one in the palm of your hand, adding one teaspoon of vegetable oil like olive oil, mixing the two a bit with a fingertip, then rubbing the mixture onto your skin (arm, leg, or face). Wipe off the oil with a tissue. You will feel something akin to tingling in your skin.

Some EOs are poisonous if ingested. Some cause skin irritation. However, oils have no side effects when they are used properly, and are largely free from allergens. Consistency varies from watery to firm. Color ranges from clear to dark brown, red, green, blue. They dye fabrics readily, so avoid direct contact between the two. They evaporate in the air with varying speeds and intensities. They are highly sensitive to UV light and heat, and for this reason,

* Technically, the result of *extraction* is known as a concrete, if it has a waxy consistency, or a resinoid, if it has a resinous nature. A concrete may be subjected to alcohol extraction to remove most of the wax, thereby yielding an absolute. An absolute can be subjected to a further process known as molecular distillation, which yields a totally volatile substance commonly called essential oil. The process of *enfleurage* which yields a pomade (used in perfumery), is today done only rarely—the great number of production workers previously employed in Grasse have lately switched to other industries, in particular those associated with tourists.

when you are making a cosmetic in a way that utilizes heat, add the EOs last. They may have chemical reactions with plastic. They are best stored in a cool dark place in glass; dark brown bottles are typically used.

Quality

To ensure high therapeutic quality in the EOs you buy, choose a brand that provides important information:

- the botanical species—required;
- the chemotype for those species that have them, such as rosemary and thyme (*thymus vulgaris*)—required;
- country of origin—required; and
- the method of extraction—optional.

Application

In most cases, EOs must be diluted in a "carrier" vegetable oil (single or blend); they may also be diluted in various liquids: floral water, witch hazel, water, aloe gel. EOs are fully soluble in vegetable oils, partially soluble in alcohol, and insoluble in water. They can be emulsified by liquid soap, milk, sugar (including honey), eggs, lecithin, liquor, vinegar (somewhat), and shaking. EOs are typically included in facial skin oils in a 0.5% dilution, in body skin oils in a 1% dilution, in ointments in a 5% dilution, and in topical applications for acute conditions in a 10% dilution; see section on Dilutions for corresponding amounts. When blending essential oils, it is best to let the blend rest for awhile before use, in order to let their fragrances marry; this can be done before or after they are added to the other ingredients.

When EOs are used in a cosmetic, usually two or more are used together. A combination of EOs having the same properties results in a blend having the same properties but more strongly than the combined strengths of the individual EOs. This is synergy. When blending, don't settle for a combination that does not smell pleasant. Your enjoyment of the fragrance is an important aspect of the effectiveness of the blend.

Similarly, don't overlook the pleasure of using EOs solely for their fragrance. There are many EOs with no particular skin or hair benefit but with lovely fragrances. Feel free to add them to cosmetics for their fragrance alone. Remember that the original perfumes were mixtures of essential oils. You can blend your own oils and use them to scent your skin, your bath, your closet, and your home.

List of Essential Oils

Basil is antiseptic, bactericide, tonic, and stimulant. It imitates estrogen[16], which may in turn benefit acne.* "A refreshing and tonic action benefits sluggish and congested skins."[16]

Benzoin is healing and deodorant and is "of great value in skin conditions where there is redness, irritation, or itching, such as dermatitis; also for skin which is cracked or dry.."[12] Benzoin is a resinoid, i.e., it is an extract of the resin of a tree that grows in Arabia and Africa. It is barely oil-soluble and is fully alcohol-soluble.

Bergamot is antiseptic, cicatrisant, deodorant, tonic, healing. It "has a slightly irritating effect on the skin in high concentrations but, if used in moderation (1% or less), it has the reverse effect. It has been found useful in eczema, psoriasis, and acne. It has also been used in seborrhea of the skin and scalp.."[12] It "seems to benefit oily skin conditions, especially when linked to stress."[16]

Cajeput is distilled from the leaves and twig ends of the *Melaleuca leucadendron* tree, whose common name in the nursery business is the Cajeput tree; it also spelled cajuput. It is antiseptic, cicatrisant, and stimulant; it is known in some cases to irritate sensitive skin and mucous membranes. "Said to be beneficial for chronic skin conditions such as acne and psoriasis."[16] Cajeput is "antimicrobial and eases pain. It is primarily applied in cases of skin

* I note all essential oils that influence hormones as being a possible treatment for acne because birth control pills (that control estrogen) have been highly effective in acne, especially mine.

pain, hair loss, and infection. Since it irritates sensitive skin, niaouli may be substituted instead."[2] Because it is a cousin to Niaouli and Tea Tree, it has similar properties and effects.

Caraway is an "effective tissue regenerator and particularly helpful for oily skin conditions. Has been known to disperse bruises, reduce boils, and clean infected wounds. Other benefits include relief from itchy skin, acne, scalp problems and scabies. If that wasn't enough, was once used to liven up pale complexions too."[16] Caraway is antiseptic, astringent, depurative, disinfectant, and stimulant. It may irritate sensitive skin.

Carrot Seed contains beta-carotene and benefits the results of vitamin A deficiency: thickening skin, excessive drying, elevated pigmentation, the formation of wrinkles; it also stimulates the secretion of sebum and perspiration and accelerates the formation of new cells. Added to creams and oils it encourages tanning. Carrot Seed "improves the complexion due to its strengthening effect on red blood cells, adding tone and elasticity to the skin. Gives a more 'youthful' appearance apparently and said to remove 'age' spots. A panacea for premature aging and keeping wrinkles at bay—perhaps due to its formative action on epidermal cells. This may also help scarring. Also said to alleviate other problems such as weeping sores and ulcers, vitiligo (lack of pigment), pruritis, boils, carbuncles, eczema, psoriasis. Generally healing to inflamed wounds as well as dry and hard skin, calluses and corns."[16] Carrot Seed has a "tonic action on the hormones"[16] which may in turn benefit the skin. It is made from the seeds of the wild carrot *Daucus carota*, also known to gardeners as Queen Anne's Lace.

Cedarwood "has a pronounced effect on the skin, and is of value in all types of skin eruptions. Its action is sedative, astringent, antiseptic, and it relieves itching. It is very good for acne, oily skin, and seborrhea of the scalp (oily hair, dandruff).. It may also be of value in more serious conditions such as eczema, dermatitis, and psoriasis. In high concentrations it will irritate the skin."[12] "Skin softening properties are enhanced apparently when mixed with Cypress and Frankincense.. High concentrations may possibly irritate the skin."[16]

Chamomile is analgesic, anti-inflammative, cicatrisant, and antiseptic. It is good for skin inflammation, dermatitis, acne, and hypersensitive skin. "It is also good for dry skin, especially when there is redness or sensitivity."[12] Chamomile "smoothes out broken capillaries, improving elasticity. Good for dry and itchy skin, eases puffiness and strengthens the tissues. An excellent skin cleanser."[16]

Cinnamon "has a mildly astringent effect on the skin, tightening loose tissues and apparently effective in clearing warts."[16] It is also a stimulant.

Citronella is antiseptic, deodorant, tonic, and stimulant. (It has other properties which make it an effective insect repellant.) "Said to have skin softening qualities when combined with Neroli and Bergamot."[16] It could be useful in a body nourisher that also repels insects!

Clary Sage "is much used in skin care because of its scent. It is useful for inflamed, normal, or over-hydrated skin."[12] An esthetician I met at an aromatherapy seminar said she got good results treating acne with Clary Sage (in an ongoing treatment). "Appears to possess some cell regenerating properties especially with scalp problems encouraging hair growth."[16] It is anti-inflammative, antiseptic, deodorant, tonic, and a hormone balancer—which may account for its effect on acne.

Cypress "exerts a balancing action over fluids. It controls excessive loss of water and can therefore be helpful to the mature skin. Sweaty and oily skin may also benefit and wounds seem to heal well due to its cicatrisant properties."[16] It is antiseptic, astringent, cicatrisant, deodorant, styptic, and tonic. It is the best choice for excessive perspiration.

Eucalyptus is antiseptic, anti-inflammative, antiviral, bactericide, cicatrisant, decongestant, deodorant, depurative. "Apparently useful for skin eruptions like herpes and good for burns.. Clears congested skin."[16]

Fennel "seems to have a cleansing and tonic action on the skin and a reputation for keeping wrinkles at bay!"[16] It is anti-inflammative, antiseptic, detoxicant, stimulant, and tonic. It is said to imitate estrogen[16], which may have a beneficial effect on acne. It may irritate sensitive skin.

Frankincense is distilled from the gum resin of the *Boswellia thurifera* tree, and is occasionally called Olibanum. It has "been widely used in skin care preparations in past centuries. It is astringent, may be slightly anti-inflammatory, and appears to preserve a youthful complexion, preventing (dare one say, slightly eradicating?) wrinkles and other abominations of old age."[12] In addition, Frankincense has an anti-oxidant effect on fats and oils.[11]

Rose Geranium "is useful..for all types of skin conditions including dry eczema, burns, shingles, ringworm, and pediculosis (lice). Geranium is also of great value in skin care, and can be used on almost any type of skin. It is cleansing, refreshing, astringent, and is a mild skin tonic. It also has considerable antifungal properties. It may be used on inflamed skin, and is good for sluggish, congested, oily types."[12] Wanda Sellar claims it is "a good overall skin cleanser". Its regulatory effect on the hormonal system may benefit acne. It may irritate sensitive skin.

Immortelle is also called everlast(ing) and helichrysum. It stimulates the production of new cells and offers some UV protection. It is anti-inflammatory, antimicrobial, antiseptic, cicatrisant, and fungicidal. It is useful for treating a range of skin injuries such as abscesses, boils, burns, and cuts as well as acne, dermatitis, eczema, and allergic conditions. It has had "spectacular results for wound healing and for stimulating the formation of new cells and tissues"; used in regenerative skin care, it is "unsurpassed in its ability to prevent or alleviate bruising" (Kurt Schnaubelt, *Aromatherapy Course*, 1997).

Jasmine is antiseptic and emollient. "A luxurious but highly effective balm and tonic for dry and sensitive skin though generally beneficial to all types. A blend with Mandarin and Lavender increases skin elasticity and is often used to soften stretch marks and scarring."[16] It is a "superb hormone balancer"[16], which may in turn benefit acne.

Juniper "stimulates the circulation, and as a blood purifier is indicated in all disorders of the skin and blood. It is equally useful applied externally for eczema, dermatitis, and perhaps psoriasis. Its combined depurative, sudorific, antiseptic, and rubefacient properties make it an ideal remedy for skin disorders.. As an antiseptic-astringent it is good for oily skins and acne.. [It] makes a very good aromatic water for cleansing and toning the skin."[12] Juniper would be good in a compress used to open pores in preparation for facial cleansing. "Prolonged use may over stimulate the kidneys."[16]

Lavender is generally regarded as the most useful and versatile essence for therapeutic purposes. It may be used for any skin condition and on any type of skin (oily, dry, sensitive, acneic); it seems to work best in combination with other essences. It is primarily healing and anti-inflammatory. It is a very good cytophylactic (regeneration of skin cells) and so may be considered a skin rejuvenating agent.[12] It's deodorant properties make it doubly useful when applied straight to just-shaved armpits. English lavender is *Lavandula angustifolia* (also known as *L. vera*), the two French lavenders are *L. officinalis* and *L. stoechas* (which I have also found referred to as Spanish lavender).

Lemon is antiseptic, astringent, bactericide, cicatrisant, depurative, emollient, tonic. "Brightens pale and dull complexions by removing dead skin cells. It smoothes out broken capillaries and has an effective cleansing action on greasy skin and hair. A popular remedy for removing corns, warts and verrucas. Also has a softening effect on scar tissue and guards against brittle nails.. May irritate sensitive skins."[16]

Lemongrass is antiseptic, bactericide, deodorant, stimulant, tonic. "Gives good tone to the skin and may be effective in open pores. Reputedly able to clear acne and balance oily conditions. Athletes foot and other fungal infections could respond favorably..A rather harsh essential oil and could irritate sensitive skins."[16] It is also used for excessive perspiration.

Lime is tonic.

Orange Blossom, or **Neroli**, "can be used with benefit on any type of skin. It is totally non-irritant and may be used where there is irritation or redness. It is said to be useful for dry broken skin and broken veins. It is one of the oils that acts on a cellular level, stimulating the elimination of old cells and the growth of new ones. Neroli makes a luxurious, relaxing, and deodorant bath oil."[12] It is also emollient and tonic, and improves skin elasticity.

Niaouli is distilled from the leaves and shoots of the *Melaleuca viridiflora* tree. It is antiseptic, bactericide, cicatrisant, decongestant, stimulant, healing. "A tissue stimulant promoting local circulation, increasing white blood cell and antibody activity, helping to fight infections.. Firms the tissues and aids healing and may be helpful with skin eruptions, acne.."[16] Another source considers it very effective in treating acne; they claim it has antibiotic properties.

Orange is antiseptic, tonic. "Its sweating action speeds out toxins in a congested skin [while] at the same time appears to deal effectively with dry skin, wrinkles and dermatitis. All in all a rather good skin tonic."[16] This description makes it sound ideal for an older skin with acne (mine!). And what a lovely fragrance! Also, it might be useful in compresses to open pores. "Prolonged use and high dosage may irritate sensitive skin."[16]

Peppermint is anti-inflammative, antiseptic, astringent, stimulant. It removes toxic congestion. It "is cooling in action and can relieve itching, inflammation and sunburn. Also softens skin, helps to remove blackheads and effective on greasy skin and hair."[16]

Petitgrain has a "tonic effect on the skin and could help in clearing up skin blemishes like pimples or even acne."[16] This would make it easier to justify its acquisition—it is lovely in perfumery. It is deodorant and is used for excessive perspiration.

Pine is bactericide, balsamic, deodorant. It is used for cuts, sores, and excessive perspiration.

Rose is "one of the most antiseptic essences. This, combined with its slightly tonic and soothing qualities and its action on the capillaries, makes it useful for virtually all types of skin. It is particularly good for mature, dry, or sensitive skin, and for any kind of redness, or inflammation."[12] The classic Rose Otto is distilled from *Rosa damascena* (damask rose) and is produced only in Bulgaria; this is the finest and most expensive rose oil. The same plant is also cultivated in Morocco and Turkey where an absolute (made by extraction) and an otto (having a pasty-to-solid consistency) are produced. French rose oil is extracted from *Rosa centifolia* (cabbage rose). The small amount of rose oil which can be obtained from the flowers combined with its saleability compels many producers to adulterate rose oil and chemists to synthesize it; it is one of the most expensive EOs. Should you choose to use rose oil for its cosmetic benefits, be sure to purchase a high quality product.

Rosewood is antiseptic, bactericide, deodorant, stimulant, tonic. "Apparently a cell stimulant and tissue regenerator which action could be useful with cuts and wounds. Reputedly helpful with skin that is dry, sensitive and inflamed. May even combat ageing skin and wrinkles! Its balancing and warming action possibly valuable for hydrated conditions as well."[16]

Sandalwood "is one of the most useful oils for the skin. It is the classic choice for dry skin, and for dehydrated skin should be applied with warm compresses. It relieves itching and inflammation of the skin, and acts as an antiseptic in acne. As a mild astringent it may be profitably used in oily skin conditions."[12] "Gives a softening effect and makes a good neck cream mixed with cocoa butter."[16]

Seaweed essential oils, when absorbed by the skin, act as vectors for the diverse ions contained in the algaes—by increasing their penetration speed and perhaps their fixation around certain organs. France developed a method of extracting essential oils from seaweed called crybroyage. Crybroyage seaweed extract products will stimulate circulation, attract oxygen from the skin's lower levels, enhance its absorption, and, when combined with steam, increase capillary action.

Spanish Sage (*Salvia lavandulafolia*) is anti-inflammatory, deodorant, antimicrobial, antiseptic, astringent, depurative, tonic, and a regulator of seborrhea. Useful in "acne, cuts, dandruff, dermatitis, eczema, excessive sweating, hair loss."[20] (There is another sage, called Common Sage or *Salvia officinalis*, that has no cosmetic uses.)

Tea Tree (from *Melaleuca alternifolia*) has a broad spectrum of antiseptic and fungicidal properties. Applied undiluted, it treats burns (use with ice packs), pimples, boils, the site of a toothache, gum infections, and mouth ulcer. For general skin care it should be diluted 1:10 with a vegetable oil. It may irritate sensitive skin.

Ylang-Ylang is "a versatile oil, having a balancing action on sebum so making it effective on both oily and dry skins. Also has a tonic and stimulating effect on the scalp promoting a more luxurious hair growth."[16] It may irritate sensitive skin.

The skin care properties of essential oils are summarized in a table on the next page.

Skin Care Properties of Essential Oils

Essential Oil	*Cleanser*	*Detoxifier*	*Decongestant*	*Depurative*	*Tonic*	*Astringent*	*Antiseptic*	*Healing*	*Calmative*	*Anti-inflammatory*	*Moisturizer*	*Oil Regulator*	*Stimulant*	*Cell Regenerator*	*Rejuvenator*	*Especially Good For*	*Other Properties*
Benzoin							■	■	■				■		■	mature, chapped, dermatitis	improves elasticity
Bergamot						■	■	■				■				acne	cicatrisant, softener
Caraway				■		■	■						■	■		oily, acne	disinfectant
Carrot Seed	■		■	■	■			■			■		■			mature, wrinkles	improves elasticity
Chamomile	■							■	■	■						inflammation, dermatitis, acne, dry-sensitive	cicatrisant, improves elasticity
Clary Sage					■		■		■	■		■		■		acne, wrinkles ?	
Fennel	■	■			■		■			■			■			wrinkles	refining
Frankincense						■	■								■	wrinkles, mature, chapped, wounds	preserves youthful complexion
Geranium	■				■	■	■			■				■		oily, dry eczema	
Juniper	■	■	■	■		■	■									acne	antifungal
Lavender							■	■	■	■		■		■	■	acne; best for burns	antifungal, antiviral
Lemon	■			■			■								■	oily, acne, brittle nails	antifungal

Essential Oil	*Cleanser*	*Detoxifier*	*Decongestant*	*Depurative*	*Tonic*	*Astringent*	*Antiseptic*	*Healing*	*Calmative*	*Anti-inflammatory*	*Moisturizer*	*Oil Regulator*	*Stimulant*	*Cell Regenerator*	*Rejuvenator*	*Especially Good For*	*Other Properties*
Myrrh					■	■	■			■					■	mature, chapped, eczema	
Neroli					■									■	■	elasticity, mature, dry	smoothing
Niaouli			■					■					■			acne	bactericide
Orange			■		■		■									dry, wrinkles	
Palmarosa							■				■		■	■		acne, wrinkles	balancing, antiviral
Patchouli			■		■	■	■	■		■		■		■	■	acne, wrinkles, mature, chapped	antifungal, cicatrisant
Peppermint	■		■		■			■								acne, dermatitis	
Rose				■	■	■	■			■	■			■		mature, wrinkles	
Rosemary					■	■	■					■	■		■		
Rosewood					■		■						■	■		all	smoothing, antifungal
Sage				■				■				■				acne, dermatitis	antifungal
Sandalwood						■	■	■	■		■				■	acne, dry, chapped, aftershave	antifungal, antiviral, bactericidal
Tea Tree	■	■					■	■								acne	antifungal, antiviral (strongly)
Ylang Ylang					■							■					

A brief summary of a few selected EOs that are particularly useful in skin care follows (when an EO is duplicated, it is especially useful for that condition):

Skin Type	*Cleanse*	*Nourish*
all skins	rose geranium, carrot, fennel, orange	lavender, neroli, rose, frankincense, lavender, rose geranium
oily, acne	juniper, lemon, peppermint, tea tree	bergamot, niaouli
dry		chamomile, rose, benzoin, rosewood, sandalwood, rosemary
irritated, sensitive		chamomile, rose, benzoin, clary sage, rosewood
mature, wrinkled		frankincense, patchouli, lavender, neroli, sandalwood

Hair Care Properties of Essential Oils

The following table summarizes the role of essential oils in hair care. Remember, scalp is skin, and the EOs having skin care properties can also be appropriate to scalp care, especially when hair is oily or dry.

Essential Oil	*Hair Care Properties and Usage*
Bay	hair and scalp stimulant; helps to clear dandruff
Bergamot	degreases oily hair
Burdock Root	for brittle hair and split ends*
Cajeput	treats hair loss; irritates sensitive skin
Carrot	for dry and normal hair
Cedarwood	antiseptic, fungicidal, anti seborrheic; for greasy hair, dandruff, psoriasis, hair loss
Chamomile, Roman	adds shine to blond hair when used as rinse
Clary Sage	oil regulator, scalp stimulant; for dandruff, hair growth, oily hair
Frankincense	for dry hair
Rose Geranium	for dry hair
Lavender	oil regulator; for oily hair, dry, and normal
Lemon	lightens blond hair when used as rinse; cleans greasy hair
Peppermint	tonic to scalp; helps itching scalp

* I include this essential oil in this table because of the uniqueness of its properties, but note that it seems unavailable in the USA. It was mentioned by Erich Keller (2). The only form I have found is a result of steeping the herb in a vegetable oil.

Essential Oil	*Hair Care Properties and Usage*
Rosemary	tonic, astringent, diaphoretic, stimulant. It stimulates the hair bulb to renewed activity. Helps prevent premature baldness, thinning hair, loss or change of hair color (works slowly), dandruff. Use in shampoo and rinse. Leaves silky dark shimmer when used as rinse over a long period of time.
Rosewood	for dark hair
Sage and Clary Sage (milder)	oil regulator, "eliminates functional disturbances". Use in shampoo, rinse, and hair oil.
Sandalwood	adds shine to dark hair
Tea Tree	fungicidal, scalp stimulant; has cleansing, clearing effect. Good for dandruff. Use in shampoo and rinse.
Thyme	for hair loss. Use in shampoo, rinse, hair oil, special treatment.
Ylang Ylang	scalp stimulant; for hair growth

FLORAL WATERS

Floral waters are a secondary product of the distillation of essential oils; the finest are distilled just for themselves. Strictly, not all floral waters are made from flowers, although the most famous are; the most accurate name is hydrosol*. They contain the water-soluble active principles of the plants and retain a small amount of the essential oil. Their properties are often unique, or a cross between those of the herb and the essential oil. Consequently, they are milder and easier to use than the EO.

The most prominent floral waters are rose, orange, and lavender. Plain floral water can be used for compresses and can be used instead of water in any skin care product. Floral water(s) in a spray bottle make an excellent refreshing facial tonic and astringent; they are especially refreshing when used cold (keep the bottle in the refrigerator). Best when used within 3–4 months, but can keep up to 12 months. Should you buy large quantities, keep your "inventory" in the freezer.

Many of the floral waters described here are hard to find. There is a relatively simple way of making them in your own kitchen that is appropriate for small volumes. You will have to research steam distillation as well as which parts of the plants should be processed and at what time of the year.

List of Floral Waters

Carrot seed is tonic, anti-inflammatory, soothing, and calming. It is nice on irritated skin (such as acne, eczema, psoriasis) and as an aftershave lotion.

Chamomile, German is calming and cleansing. It is good for sensitive skin, rash, and itching. It is also a useful wash for fungal infections and an excellent skin cleanser—use in masks, steams, and compresses.

* When reading labels, avoid products that are a combination of water and an essential oil; they sometimes call themselves "floral water". These are not hydrosols and do not have the same values discussed here. Avoid them.

Chamomile, Roman is calming, soothing, mildly astringent. It is great for skin care and is the number one floral water for baby care. It may be used as an eye wash and as a compress for conjunctivitis. It is nice for delicate and sensitive skin and for burns, sunburn, razor rash, and rosacea. It can also be used as a wash for jock itch.

Clary Sage is astringent and toning for oily skin.

Cypress is a cleanser for normal to oily skin.

Elder is used as a healing and gentle astringent for dry or normal skin. It can be used as a wash to cleanse the skin. It has been renowned since the 1800s "for clearing the complexion of freckles and sunburn, and keeping it in good condition."[1]

Everlasting or **Immortelle** is a powerful wound and scar healer. It is strongly anti-hematoma and helps ingrown hairs from shaving. Combine with Rock Rose and Carrot for aftershave or for a powerful skin healing treatment.

Lavender is very utilitarian, It is soothing to damaged or fragile skin. It is great in a cleanser or toner for all skin types. It can be applied as an antiseptic for swabbing pimples, wounds, acne, or sores. It normalizes sebaceous glands. It is used as a wash for puffy eyes, bruises, bites, and other minor external sores or blemishes to reduce puffiness. It calms sunburn and razor burn. Added to a hair rinse it reduces oiliness. It is wonderful as a facial spritz when flying.

Lemon Verbena is good for sensitive skin, to degrease teenage acneic skin, as a toner for normal to combination skin, and heals minor skin imperfections.

Melissa, also called **Lemon Balm**, is good for sensitive or aging skin. It is wonderful in a facial spritz for hot flashes or to cool skin in summer. It is a good cleanser for all skin types. It is good for baby bath, cradle cap, and wet wipes. It is also good for eczema.

Peppermint calms razor burn and is a good aftershave. It also combats itching and is a bust line toner.

Orange Blossom or **Neroli** is tonic, astringent, rejuvenating. Excellent for dry, delicate, or sensitive skin; clears acne. A superb toner. Effective in face lotions and creams. It is made from the flowers of bitter orange tree.

Rock Rose is used for cleaning wounds—it stops bleeding and promotes healing—and is an excellent and powerful anti-wrinkle treatment (it plumps cells and smoothes fine lines). It is also a good aftershave.

Rose is a classic floral water. It is tonic, astringent, antiseptic, calmative. It is good for all skins and especially for skin that is dry, mature, sensitive, or devitalized. Effective as a pure facial lotion, mask, steam, and compress.

Rose Geranium is great in skin care. Mildly anti-inflammatory; promotes healing, especially on scabby knees; balancing and adaptogenic for oily to dry to sensitive skin; continued use combats rough elbows and calluses. Nice in a facial spray.

Rosemary, Camphor is a good toner for normal to oily skin. It is great in hair products.

Rosemary, Verbenone is great for problem skin; calms irritations, bumps, and roughness; clarifies and brightens all complexions; soothes psoriasis; is mildly antiseptic, anti-infectious.

Sandalwood preserves skin cells, is good for delicate and mature skin; a great aftershave; helps rosacea, psoriasis, and couperose.

Tea Tree is antiseptic, antifungal. Use on wounds, skin irritations, infections.

Thyme, Linalool is antiseptic, antifungal. Use to clean wounds, prevent infections. Cleanser for normal to oily skin, enlarged pores; specific for bed sores.

Thyme, Thymol is strongly antiseptic and mildly antifungal.

Winter Savory is antifungal, antibacterial. Cleanses acne skin.

Witch Hazel is especially astringent, also anti-inflammatory, antiseptic, antifungal. The hydrosol has a very different aroma from the commercial distillate. An excellent toner on teen-age and acneic skin.

Yarrow is astringent and anti-inflammatory, soothing for damaged or reactive skin. It is a cleanser for acne.

VITAMINS

Vitamins function principally as coenzymes—collaborators with enzymes in a variety of metabolic processes. They are essential to growth, vitality, and health. While the greater part of our vitamin intake is dietary, vitamins in natural cosmetics can penetrate and benefit the skin and hair.

Vitamins important to the health of skin and hair are:

Water-soluble	Fat-soluble
B2, Riboflavin	A
B3, Niacin	E
B5, Pantothenic acid	
PABA	
C	

Vitamin A can be consumed intact (e.g., in cod liver oil) and is manufactured in the body from carotenes* (primarily beta-carotene), sometimes called pro-vitamin A, when they are consumed with fat. While many of its benefits can be realized from dietary intake, topical application is known to stimulate the growth of the base layer of skin cells; it helps the cells differentiate normally and provides their structural integrity. Natural sources include yellow dock, spearmint, nettle, calendula.

Vitamin B2, **riboflavin**, is essential for cell growth, is instrumental in cell respiration (helping each cell utilize oxygen most efficiently), and helps maintain healthy skin, hair, and nails. It is necessary for normal cell growth. It is "given for skin difficulties such as acne, dermatitis, eczema, and skin ulcers."[26] Most plants have trace amounts.

Vitamin B5, pantothenic acid, is generally important to healthy skin and thought to help prevent aging, wrinkles, and grey hair. Mr. Hampton claims it is an excellent skin hydrator, leaving the skin smooth and moist, and that it makes hair look thicker and fuller and gives hair body. It is absorbed through the scalp and into the hair keratin. Other forms are called pantothenate and panthenol.

PABA, para-aminobenzoic acid is a water-soluble B vitamin found in various foods. It is known to be nourishing to hair (in particular as a growth stimulant) and beneficial as a sunscreen and reducer of skin aging and wrinkles. It has been used to restore grey hair to its original color, although its limited success is believed to be a result of relieving a PABA deficiency.[26] Topical toxicity is rare, although some people may have a slight reddening of the

* Consumed carotenes are converted to vitamin A in the upper intestine and in the liver in the presence of fatty acids. I have found no claims for such conversion following skin absorption. On the other hand, vitamin A is used in topical applications to treat a variety of skin problems, including acne (as Retin-A).

skin. PABA screens out UV-B light and is a good choice for sun protection (use about 5-7% in the recipe of your choice); it works best when combined with other sun protectors such as shea butter, sesame oil, elder flowers infusion.

Vitamin C is necessary for normal body cell functioning, and the formation of healthy collagen and skin. Natural sources include yellow dock, nettle, spearmint, coltsfoot.

Vitamin E is actually a family of compounds (seven are known)—the tocopherols. It was first isolated from wheat germ oil. It is absorbed from food in the intestine, and is partially absorbed from topical application through the skin. Its primary function is as an antioxidant, which protects the body from cellular irritation and damage, stabilizes cell membranes, and protects skin tissues. It has been applied topically to heal and diminish burns, abrasions, and scars (vitamin A appears to work as well if not better in this situation). Natural sources include all unrefined, cold-pressed vegetable oils.

Amino Acids and Proteins

Amino acids are linked together in specific ways to form proteins. There are 22 known amino acids, eight of which are considered "essential". These eight include two sulfur-containing amino acids: cystine and methionine.

The amino acid content of the egg is held to be the most nearly perfect form of protein for the human body, and as such is the standard for evaluating all other protein sources.

Protein can benefit skin and hair in topical applications. The sulfur-containing amino acids (cysteine*, cystine, and methionine) can be used to treat acne and other skin problems—topical use on skin results in improved smoothness, softness, and resiliency. In hair conditioners they can rebuild hair that has been damaged by permanents, hair color, straightening, braiding, or other chemical treatments and help reduce scalp problems. Aubrey Hampton claims protein has hydrophilic properties and, when used in shampoos and conditioners, leaves the hair clean and having a "soft, silky feel". On the other hand, he claims the amino acids "lack film-forming and texturizing properties which enhance the feel of the hair."[11]

As discussed elsewhere, combinations of the essential fatty acids and/or allantoin with the sulfur-containing amino acids provide optimal conditioning benefits to skin and hair.

Amino acids are present in blue-green algae (especially the variety from Klamath Lake), licorice, German chamomile, yarrow, hops, stinging nettle, comfrey (which is 35% protein), and fennel seed (which is 16–20% protein). I do not know how much, if any, cystine and methionine are present in these herbs. As stated previously, coltsfoot and horsetail contain cystine.

Milk protein (lactoalbumin) is largely the equivalent of egg protein, with the exception that it has less cystine and methionine. The protein in soybeans is close to that of egg, but it has even less cystine and methionine than milk. Powdered dried egg white has even more cystine and methionine than a whole egg, but its drying nature may make it unsuitable in an hair conditioner. Wheat bran has the same quality of cystine and methionine as egg.

The following paragraphs discuss various forms of protein that you may encounter in cosmetic ingredients. I do not consider them to be natural because of the manner by which they are "derived" (manufactured) from the original whole substance.

Keratin is included in some commercial cosmetics. While it may seem that externally applied keratin should help keratin-containing structures like skin and hair, in practice this does not happen because of the way in which keratin is used as an ingredient. The most helpful constituent of topical keratin is cystine, but this is removed

* Cysteine is the non-oxidized form of cystine.

before the cosmetic is formulated. The result is a product whose benefits are delivered by ingredients other than keratin.

Hydrolysis is a chemical process of decomposition involving the splitting of a bond and the addition of the elements of water (hydrogen and oxygen). The physical molecular structure of protein depends to varying degrees on its atomic bonds. Hydrolyzed protein is not necessarily compatible with a natural, intact protein; more importantly, such compatibility cannot be guaranteed.

Hydrolyzed human hair protein is not a natural ingredient. Some people believe it benefits intact human hair and consequently it is incorporated in some commercial hair cosmetics. The labels I have read list the percentages of the various amino acids, including cystine and methionine. Unfortunately, these products are also replete with synthetic ingredients.

Soluble collagen is derived from cattle, usually the skin. Research findings indicate that the topical application of soluble collagen can arrest or compensate for the loss of soluble collagen in the skin and stimulate the formation of new collagenic fibrils which increase the elasticity of the skin and elevate its moisture content. Soluble collagen in a cosmetic can be rendered insoluble by the inclusion of synthetic chemicals in the product, or by improper compounding or manufacturing.

COSMETIC CLAYS

Clay has its own section because there's a good deal of interesting information about it. Other skin care books discuss clay in terms of its color, but it is more accurately described in terms of its mineral content. And because the nature of individual clays, e.g., clays mined from different deposits, is unique, no two clays are alike.

Clay Minerals

First of all, *clay,* as a word by itself, in geology simply denotes a particle size range of less than 2 microns; it is one of three such categories, the other two being sand and loam (distinctions useful to gardeners). *Clay mineral* is the geological term for a family of hydrous alumino-silicates (more specifically phyllosilicates), most of which have particle sizes less than 4 microns. It is these clay minerals that as a group contain the cosmetic clays.

Clays are byproducts of lengthy glaciation and weathering of rock, primarily granite. Clay is a colloid—it is dispersed in other liquids without settling out or dissolving.

Mineralogists classify clay minerals by their crystalline structure. The basic groups are Kaolinite, Mica, Smectite, Talc, and Vermiculite. The Kaolinite group includes Kaolin. The Smectite group includes Montmorillonite. This grouping reveals the mineralogical differences between the clays.

Any given clay material may be composed of particles of a single clay mineral, but it is more likely to be a complex of many different minerals. In nature, pure samples of a single clay mineral are rare, especially the smectite clays. There is great variety in the clay deposits. It is easy to find a wide variety of same-named clays, each of which is different. This is the key to why cosmetic clays are so variable.

All clays will adsorb, but only the smectite group is capable of absorption.

- Adsorption: To cause other substances to stick to the outside of the clay.
- Absorption: To draw substances into the clay's internal structure. Absorptive clays are called expandable clays.

The different kinds of clay minerals exist in a variety of colors. No color is specific to one kind of clay.

Kaolin is a generally white clay named after Mt. Kaolin, China, where it was originally discovered. This clay is used in Kaopectate.

Montmorillonite contains aluminum, silicon, oxygen, hydrogen (the basic alumino-silicate) and magnesium, sodium, and calcium. Its ability to adsorb and absorb toxins is greater than that of the clays in the other groups. It absorbs water, is involved in inorganic exchange reactions, and reacts with and absorbs some organic liquids. It also has medicinal benefits when taken internally. The clay is named after the area where it was first found—Montmorillon, France; the town is located in Poitou-Charentes, south of the Loire Valley.

Bentonite is a clay formed by the alteration of minute glass particles derived from weathered volcanic ash; it contains glass particles. It was named for Fort Benton, Montana near which it was first discovered. Bentonite is actually a trade name, not a mineral name. It is largely in the smectite group. One constituent is Montmorillonite, but the remaining contents vary by deposit. There are three types of bentonite: sodium bentonite, which can absorb large quantities of water and swell to many times its original volume; magnesium bentonite; and calcium bentonite, which does not swell but which breaks down to a finely granular aggregate sometimes called fuller's earth. Bentonite is a much-used industrial clay, and is often wrongly named montmorillonite.

Pascalite is a non-swelling cream-colored calcium bentonite found in the Big Horn Mountains of Wyoming. It was "discovered" in the 1930s by a trapper named Pascal. It is believed to remove toxins from the body and build up the immune system. One supplier says "it may well be an as-yet-unidentified mineral outside the scope of present knowledge" and a "very mysterious substance." It is claimed to be a potent skin cleanser and conditioner. Researcher Harvey C. Lisle says it irradicates TV and microwave radiation. It is known to cure psoriasis (after a four-month program of internal and external use).

Fuller's earth is a generic term that denotes any clay mineral having a substantial ability to absorb impurities or coloring bodies from fats, grease, or oils. Its name originated in the textile industry, in which workers (called fullers) cleaned raw wool by kneading it with a mixture of water and clay. Montmorillonite is the principal clay mineral in fuller's earth, but other minerals such as kaolinite also occur and account for its variable chemical composition. Fuller's earth usually exists as a by-product of the decomposition of feldspar or from the slow transformation of volcanic ash into crystalline solids. It is very fine-grained and has a higher water content than most clays. It also crumbles to mud when mixed with water, so it has little natural plasticity.

Illite, a mineral in the Mica group, is named after Illinois where it was first discovered. The best known species of illite is glauconite, a green mineral clay. Illite contains potassium, magnesium, and iron in addition to the basic clay substrate. It is mostly made by the weathering of muscovite-phengite, but also by the alteration of K-feldspar or the recrystallization of smectite by marine sediment. It is a non-swelling clay. Pearly, translucent grey-white to silvery-white or greenish-gray in color, it sometimes has other hues. Several suppliers sell "French Green Clay" which is really illite.

Talc is powdered soapstone (hydrated magnesium silicate). It has a soft greasy feel. Repeated inhalation may lead to talcosis, a lung disease—a form of pneumoconiosis—that is manifested by focal or diffuse interstitial fibrosis. Talc can enter the lungs through inhalation or through the bloodstream. The latter occurs when talc is used as a filler in a drug ingested intravenously. Only prolonged and long term excessive inhalation of talc may cause talcosis; OSHA has set permissible exposure limits for airborne exposure of talc uncontaminated with asbestos as 20 mppcf (million parts per cubic foot). Talcosis is primarily a hazard for miners, talc processors, and IV drug users.

Vermiculite is used as an additive in garden planting soil mixes.

Cosmetic Uses

Clay can clear the skin, stimulate circulation, and reduce inflammation*. It is one of the best skin cleansers available, for it draws out toxins like a magnet. Clay can be used to cleanse every type of skin; it is particularly useful in masks for blemished, oily, tired, and mature skin. It may also be incorporated in nourishing cosmetics as the minerals it contains are beneficial to the skin.

Different clays have different cosmetic properties and uses. As I said earlier, color does not necessarily imply a particular mineral. For example, green clay varies by supplier. Use the following suggestions as a starting point, but be discriminating in your evaluation of a product that you purchase. If it does not perform as described here, try a clay from a different supplier.

Montmorillonite clay reduces sebaceous production, and is best suited for oily skin and acne. It also has an anti-aging effect on mature skin and revitalizes dry skin. It is antiseptic and healing and is an emollient which leaves the skin silky smooth.

French green montmorillonite clay is excellent in facial masks. It leaves my skin soft, smooth, and vibrant.

Kaolin is a well-known white clay. Its ability to take color well makes it useful in makeup. It is nice as an ingredient of an exfoliating cleansing scrub, but I don't like it in masks.

Fuller's earth is a soft brown clay which is very stimulating and has a marked effect on the epidermis. It is cleansing and removes dead skin cells; it is useful on oily to normal skin only. I have never tried it.

Bentonite is difficult to mix in water and only a small amount remains suspended in water, as a kind of gel. Because of its glass content, its edges are rough and may irritate the skin. It is sometimes included in clay mask products because it is less expensive than other clays. I don't recommend it.

Talc is used in face and body powders and in make-up. It is regarded with suspicion these days because 1) in the 1970s, some sources were found to be contaminated with asbestos, and 2) repeated inhalation may lead to talcosis. Asbestos contamination is no longer a concern among commercial cosmetic manufacturers because purification procedures were established by at least the major suppliers. Talcosis should not be a concern to you because daily use as a body powder is unlikely to provide the excessive levels of inhalation known to cause lung disease.

Mica is used cosmetically as pearlescent pigments in make-up. It is what makes eye shadow appear frosted.

WAXES

Waxes are emulsifiers, thickeners, and barrier agents. They contain fatty acids and other substances. Waxes are obtained from animals, plants, and minerals. Choose a wax by its purity, availability, and melting point. The higher the melting point, the less amount you will need to thicken a cream.

Animal waxes include beeswax and lanolin. Vegetable waxes are produced by plants, most commonly in the leaves and/or stems. They include candelilla wax and carnauba wax. Mineral waxes are mined from the earth. They include ozokerite. Ceresin is a refined form of ozokerite.

Beeswax is excreted by the honeybee and used to form honeycomb. Its color ranges from deep brown to light amber; white beeswax has been bleached. Beeswax may be allergenic, either because of the pollen particles in the natural beeswax or the residue of the bleaching agents. In cosmetics it is used as a thickener, emulsifier, and

* Clay has many medicinal properties, among them: it can reduce swelling and stimulate the immune system. These properties enable it to treat Carpal Tunnel Syndrome.

stiffening agent. Added to creams and lotions, beeswax can make them either smooth or hard, depending on the proportions. It can bind and stabilize emulsions that contain a great amount of oil. Aubrey Hampton claims "it is the best medium to make a good natural emulsion."[11] It melts at 144–149° F.

Candelilla wax is a vegetable wax that occurs as the scaly covering of a reed-like plant *Euphorbia antisiphilitica*, *E. cerifera*, and *Pedilanthus pavonis*, which is native to Mexico and Texas. Its melting point is about 160° F. (higher than beeswax). Its color is light brown to yellow. It is stable when dry and sealed.

Carnauba wax is a hard brittle wax from the leaves of the carnauba palm, *Copernica cerifera*, of Brazil. Its melting point is 181° F. and higher. Its color is yellow to medium yellow. It is harder than candelilla wax and jojoba wax. It is stable when dry and sealed.

Lanolin is a fatty, waxy substance excreted by the skin of sheep and held in their wool. It is yellow and semi-solid in it natural state. It is available commercially in two states: *Hydrous* lanolin contains water and *anhydrous* does not. Lanolin is used as an emulsifier and emollient. It is well absorbed by human skin, but can be allergenic. It can be emulsified by lemon juice, alcohol, and distilled witch hazel. "The majority of lanolin used in cosmetics is highly contaminated with chlorinated organo pesticides like DDT." (per http://www.gandj.com.au/Decoding.htm)

Ozokerite in its natural form exists in deposits in Soldier Summit, Colorado and Boryslaw, Austria. The Colorado deposit was mined between1900 and 1950. Most ozokerite in its natural form is black, some is light yellow. It must be bleached to produce a white wax. True ceresin occurs naturally as ozokerite; market grades are purified (refined and bleached) and are white or yellow in color. Today ceresin is commonly manufactured from paraffin wax with the addition of other compounds to imitate the original product.

SOAPS

Soap is made by combining fat and a strong alkali (generically called lye). It is manufactured by a chemical reaction using industrial chemicals, and thus is not truly natural. Regardless, many people consider certain soaps, especially the castile types, to be appropriate for use in a program of natural skin and hair care. Make an informed choice.

Lye

The two families of lye are identified by their primary element, sodium and potassium. Soda ash is named after the sodium that comprises it. Potash is named after the potassium that comprises it.

Soda ash, or sodium carbonate, is important to the glass, soap, paper, and textile industries. Historically, it was extracted from the ashes of marine plants such as barilla or kelp or mined from dry lakebeds in Egypt. By the late 1700s these sources were insufficient to meet Europe's demand for the chemical, particularly in Great Britain, and the search was on for an industrial source. Caustic soda, or sodium hydroxide, is used in the manufacture of soap, paper, textiles, and detergents. It is also used to unblock drains in homes.

Potash as potassium hydroxide (sometimes called caustic potash) is the lye made traditionally from wood ash. It has many industrial and agricultural uses. Potash as potassium carbonate is made industrially (by the electrolysis of potassium chloride) and is also mined from rock. It has been used for soap and is now used primarily as an agricultural fertilizer.

History of Soap

Soap has been made and used for at least 5,000 years. The earliest documented evidence of soap making was found to be from 2800 B.C. in ancient Babylon. Soap was originally made from animal fat (tallow) and plant ashes (often wood). The name is of Celtic origin. Soap making was an established craft in Europe by the seventh

century with Italy, Spain, and France the early centers. It came into common use in the 19th century following two chemical discoveries that transformed soap making from a handicraft into an industry, discoveries that were at the forefront of industrial chemistry. Three men discovered the chemical processes that are behind the industrial soap of today.

In 1791 the French surgeon and chemist Nicholas Leblanc (1742–1806) patented a process for making soda ash from common salt and sulfuric acid. In 1775, the French Academy of Sciences, in order to promote the production of much-needed sodium carbonate from inexpensive sodium chloride (and thereby avoiding having to cut down acres of trees), offered a prize for a process that could produce soda ash from salt. By 1791, Nicolas Leblanc had succeeded by producing sodium carbonate from sea salt and sulfuric acid in a two-step process. He was awarded the prize but never received the prize money. Furthermore, the plant he built that produced 320 tons of soda ash per year was confiscated by the French revolutionary government. In 1802 Napoleon returned the plant (but not the prize) to him but by then Leblanc was so broke he could not afford to run it. He killed himself four years later.

In 1861 the Belgian chemist Ernest Solvay (1838–1922) and his brother Alfred invented the industrial process for producing sodium carbonate from sodium chloride, ammonia, and carbon dioxide; in 1863 they founded Solvay & Cie and built the first plant for making soda ash by this process. The Solvay process, also referred to as the ammonia-soda process, proved more economical and less polluting than the Leblanc method, and its use spread. Today it is the major industrial process used in the production of soda ash, producing roughly 3/4ths of the world's supply (the remainder being mined from natural deposits*). The exploitation of his patents brought Solvay considerable wealth which he used for philanthropic purposes, including the establishment of the Institute for Sociology at the University of Brussels and international Institutes for Physics and Chemistry.

Michele-Eugene Chevreul (1786–1889), a French chemist and director of dyeworks at the Gobelins Tapestry Works, researched many topics affecting dyes. He is most famous for creating the first chromatic color wheels and establishing the concepts of contrasting and complementary colors. He developed a color-classification system using the categories of tint, hue, and saturation, a system that is still in use today. Chevreul's color theory had a major influence on Delacroix, the Impressionist, and Post-Impressionist Movements. In addition, he studied the nature and relationship of fats, fatty acids, and glycerine; this work became the basis for both fat and soap chemistry.

Saponification and Types of Soaps

Saponification is the name of the chemical reaction of a caustic alkali solution of sodium (lye) on natural fats or oils which yields sodium fatty acid salt (soap) and glycerine (or glycerol). If industrially-produced fatty acids are substituted for natural fats, water is yielded instead of glycerin. If potash is used instead of sodium ash, the process yields a soft or liquid soap.

Castile soap, named after its area of origin in Spain, was traditionally made of olive oil and sodium hydroxide. Today the label is loosely applied to soaps presumably made of only natural vegetable fat and sodium hydroxide.

Hard fats yielding quick-lathering soaps include coconut oil, palm-kernel oil (extracted from the kernel of the fruit of the oil palm), and babassu oil (from the nut of a Brazilian tree); coconut oil soap is the most commonly used. Olive oil yields a soap of softer consistency.

My sources commonly recommend olive oil and coconut oil castile soaps. Coconut oil soap lathers readily and luxuriously and rinses quickly. Olive oil soap is less rewarding. Both are available in solid and liquid forms.

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* In 1938, large natural deposits of the mineral trona were discovered near the Green River in Wyoming. Sodium carbonate can be mined from this source less expensively than it can be produced by the Solvay process. Accordingly, since 1986, there have been no Solvay-based plants operating in North America.

Using Soap

Any soap forms a scum or precipitate in hard water that is deposited as a ring around the bathtub and a dull, sticky film on your shower, sink, skin, and hair. This is a reaction with calcium and other mineral salts present in hard water as well as traces of acidic compounds. This undesirable "feature" is not shared by detergents (and is in fact one responsible for their development). Should you consider the use of a water softener to avoid the precipitate, read my discussion of water in the last section of this chapter.

Vinegar will remove this precipitate from your skin and hair (the tub, shower, and sink fall into the realm of housekeeping, which is not addressed here). A vinegar rinse will remove it from hair. A vinegar toner will remove it from facial skin. An herbal vinegar will remove it from body skin. In the bath, vinegar added to the filling tub will prevent the precipitate.

But beware: "Soap is harsh, irritating, and drying. It destroys the protective acid mantle on the skin and removes the natural oils, both of which were designed to provide protection." Daily washing with soap reduces this protection.[22] This source goes on to "strongly advise against daily soaping the entire body or soaking in a tub of soapy water." In my own experience, shampoo made from liquid soap was very drying to my hair, and I no longer use it.

Non Soaps

Some plants contain saponins—glycosides that foam in water and are used as foaming, emulsifying, and cleansing agents in cosmetics. Of these, soap bark (quillaja), soapwort, and yucca root are perhaps the best choices for a natural cleanser.

OTHER INGREDIENTS

Alcohol can be natural or synthetic. Natural alcohol is formed when plant carbohydrate substances ferment in the presence of yeast. Such fermentation naturally stops when the alcohol concentration reaches 12%. Alcohol concentration can be increased by distillation. There is only one safe natural alcohol: ethanol, also called ethyl alcohol and grain alcohol. Ethanol can be made in two ways: in the production of alcoholic beverages (from grapes, grain, and potatoes) and by the fermentation of blackstrap molasses, a byproduct of cane and beet sugar refining. Ethanol is the predominant alcohol in beverages. Blackstrap molasses is used to make 25% of the commercial ethanol in the US.

Be cautious about "grain alcohol" in a product list, as it may or may not be natural. The majority (60%) of commercial ethanol is distilled from ethylene, a petroleum byproduct—it is decidedly unnatural. If you are using alcohol cosmetically, be sure it is a natural form of ethanol—100 proof vodka is a good substitute for pure ethanol. Alcohol is rarely used in natural cosmetics because, in any but the smallest amount, it is drying to skin and hair. It is used in aftershave lotion and toilet water, especially with essential oils. Ethanol is water-soluble and boils at 173°F. (You can evaporate out the alcohol from an herbal extract by boiling it.) Alcohol is used commercially in cosmetics largely as a preservative.

Methanol, commonly called wood alcohol, can also be made from natural or synthetic substances. It is toxic when consumed, breathed, or absorbed through the skin. It is often used to denature ethanol, which is subsequently used in rubbing alcohol and cologne.

Isopropyl alcohol is made from petroleum. It is used commercially to make hand lotion, after shave lotion, and rubbing alcohol. Dr. Hulda Clark's theory about its toxicity was verified by Dr. Dietrich Klinghardt, M.D. Ph.D., who concluded that isopropyl alcohol has caused such symptoms as nausea, mental confusion, coma, and death through ingestion, inhalation, and skin absorption.

Allantoin was first isolated in 1912 from comfrey root; it is a derivative substance. It is also present in wheat germ, aloe, and other sources. It has medicinal properties, especially in wound healing. It creates an occlusive bond on the skin, stimulates healthy tissue formation, cleans up dead skin cells, and is soothing and non-irritating. With amino acids it improves absorption from shampoos into the hair. It combines with methionine (an amino acid) to reconstitute the protein content of damaged hair. In shampoos it is effective for seborrheic dermatitis; it helps remove scales and crusts, and clears the scalp of oiliness.

Almond meal is finely ground sweet almonds. It has several uses. It can be used as a facial scrub for very oily skin with blackheads; it is fairly abrasive, so should be used gently. Almond milk (recipe is in chapter 5) is healing, softening, and slightly astringent. Almond milk can be used as a quick cleanser for oily skin (apply with saturated cotton pad, rub gently to loosen soil, wipe off) and as a toning, softening lotion (apply daily, let dry, leave on).

Apple cider vinegar is a sour liquid obtained by acetic fermentation of dilute apple cider, an alcoholic beverage; acetic acid is the chief acid in vinegar, but it also contains malic acid, an alphahydroxy acid. When mixed with essential oils, apple cider vinegar can be used to rinse calcium remnants and soap residue from the hair. Vinegar is also helpful against dandruff; it moisturizes the scalp while lifting dandruff flakes. It softens bath water. It cleans greasy, blemished skin. Facial skin is particularly well cleansed by a mixture of vinegar, water, and a few drops of essential oils of peppermint or juniper. It is also recommended for aftershave lotions. Wine vinegar, made by the fermentation of wine, has the same effect and also promotes circulation.

Benzoin is a gum resin secreted by the bark of *Styrax benzoin*. It is available as a tincture and solidified drops (sold as an essential oil). It has a mildly disinfectant and tonic effect on skin. It has a mild antioxidant effect which is useful in preserving certain cosmetics. It also has a healing effect. The tincture may be added to a cosmetic cream for its preservative properties in the proportion of 1 drop per ounce of fat.

Borax is a white natural mineral powder that makes water softer and gentler to the skin. It enhances the solidifying properties of beeswax, natural gels, and perhaps other solid fats; start with an amount of borax that is 5–6% of the weight of the beeswax. However, "the American Medical Association has issued repeated warnings of its possible toxicity following severe poisonings when borax has been ingested or applied topically to broken skin."[9] It is best avoided.

Honey is sucrose from flowers that has been converted by bees' digestive systems into glucose and fructose; it also contains enzymes (from the bees' stomachs), vitamins and minerals, proteins and carbohydrates, and pollen—in fact, more than 75 compounds. Heat applied to honey during human processing can damage those substances, thus reducing the benefits of honey. Honey has many cosmetic uses: It is used as an emollient and protective film. It acts as a clarifier and astringent. It softens the skin when used regularly. It is a moisturizer and an humectant. Bacteria will not grow in honey. It can emulsify essential oils. Honey has many medical properties: it treats burns (apply full strength, cover with sterile bandage, change daily), skin ulcers, and bed sores.

Quality of honey depends on several factors:

- Source: a profusion of wildflowers, thus possessing the essence of a multitude of plants, all of them medicinal. And free of poisons—pesticides, etc.—with which commercial plants are raised.
- Raw, because when honey is heated over 105° F., it is damaged and its beneficial properties are reduced.
- Unfiltered. However, the pollen particles may be allergenic to some people.
- Unadulterated and undiluted. Honey sellers are allowed by law to cut the honey by up to 49% with corn syrup without so indicating on the label. The best defense is to talk with the seller.

Jojoba meal is what's left of the jojoba seed after the oil is pressed from it. It contains 10% jojoba oil and 30% protein. It is available in flakes or powder. Stored dry it will keep for several years. Moistened, it is useful as a skin scrub; the jojoba fiber effectively and gently exfoliates while the residual jojoba oil leaves the skin soft and smooth. It needs refrigeration. It may be advisable to sterilize it before use.

Lecithin is an emollient, emulsifier, wetting agent, surfactant, and antioxidant. Chemically, lecithin is a mixture of different phospholipids. Since the 1930s it has been commercially extracted from the oil sludge left over after removing oil from soy beans, and as such is a waste product; it is likely to contain high levels of pesticides and solvents*. Lecithin also contains minute amounts of soy protein which has a track record of triggering severe allergic reactions. Lecithin is water-soluble and is not oil-soluble. It is typically used in a 1–2% dilution.

Oxidation is a major cause of deterioration in cosmetic products. Antioxidants act as preservatives. Natural preservatives are grapefruit seed extract (Nutribiotic is one brand), vitamin E, and vitamin C.

Papain is a proteolytic enzyme—a substance capable of causing proteins or peptides to break down into simpler substances (as in digestion). It comes from green papayas and is used to tenderize meat, as well as to soften skin and clear skin surface of cellular debris.

Pectin is a natural thickener found in some vegetables and fruits. It is used as an emulsifier and thickener.

Sodium can irritate the skin, burn the eyes, and dry the hair. Note that a water softener puts sodium into the water. In my experience, softened water dries my skin, even though it feels slick when wet. If you have dry skin or hair and use a water softener, consider turning it off.

Titanium dioxide does not occur in nature by itself, but is extracted from ilmenite (recovered from beach sands) or leuxocene ores. It is also readily mined in one of the purest forms, rutile beach sand. It is used cosmetically as a pigment and a thickener, and also as a sunblock: It reflects UV radiation in the range of 290–700 nanometers, which is nearly all the UV-A and UB-B radiation. It is effective as a sunblock because of his high refractive index and its resistance to discoloration under UV light. Titanium dioxide lies on top of the skin and is not absorbed.

Water is used in several different ways: (1) to rinse the skin/hair after various treatments and (2) as an ingredient in a cosmetic. Still spring water or reverse osmosis-filtered water is best used for formulating cosmetics. The purest form is distilled water which, when used in a cosmetic, will best delay the inevitable spoilage—at the expense of perhaps valuable minerals. If you experience any difficulty with the effects of tap water when used as a rinse, you should consider the quality of the water. Municipal water systems typically add strong chemicals like chlorine to purify the water. Tap water can also have other undesirable minerals. Water softeners typically add sodium to tap water, which can combine with chlorine to make salt. These chemicals and/or minerals may be in sufficient quantity to have a detrimental effect on your skin. Solutions: (a) utilize a different type of water softener or discontinue use, (b) install a water purifier/filter, or (c) use bottled spring water.

Yogurt is produced by certain bacteria acting on milk. It contains milk protein, enzymes, and alphahydroxy acids, all of which benefit skin. It has a moisturizing effect. It is soothing on irritated skin, including eyelids. Yogurt is great in cleansers and masks. Mixed with powdered herbs it makes a healing, cleansing mask. A moisturizing mask can be made with equal parts of yogurt and honey. When you shop for yogurt, read the ingredient list carefully and choose a whole milk product containing live named bacteria such as *Lactobacillus acidophilus*, *L. bulgaricus*, *B. bifidus*, and *S. thermophilius*.

Zinc oxide occurs in nature as the mineral zincite. It is used cosmetically as a sunblock: It absorbs UV radiation in the range of 290–700 nanometers, which is nearly all the UV-A and UB-B radiation. It remains white when exposed to UV light. Zinc oxide lies on top of the skin and is not absorbed. Contact between zinc oxide and linseed oil (flax oil) is to be avoided. OSHA reports that "Repeated exposures to zinc oxide by skin contact have resulted in papular-pustular skin eruptions in the axilla, inner thigh, inner arm, scrotum and pubic areas [ACGIH 1991]."

By the end of this list you may have noticed that I have ignored an entire class of ingredients: fruits and vegetables. Should these interest you, you can find them discussed in various other books.

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* Editorial remark, "Wise Traditions", Volume 1, Number 4; Winter 2000, page 9.