



PROCESSING HERBS AND HERBAL SKIN CARE

by Anne C. Willis, L.E., CEO

As we all strive for health and longevity, there is a growing interest towards the use of botanical-based skin care products. Plants historically hold the wisdom of the earth and can unite a generation who suffers from nature deficit disorder, to be a little closer to that which is unaffected by commercialism.

In the 1950s, the introduction of personal care products came on the scene bringing better living through chemistry. The focus of these formulas was to make people appear to “look better” and everyone was swept up in better living through chemistry. The advances that took root since that time have expanded the industry to include human health issues. With so many skin care choices that promise us everything from lighter and brighter skin to flawless wrinkle free skin texture, what could science possibly manufacture that would grab the attention of men and woman alike?

As the world becomes more complicated and modern skin care products continue to affect our overall health and well-being, the return to traditional plant medicine is on the rise. With the ringing in of 21st century, the opportunity to review many principles used in formulating personal care products became of interest to formulators and the consumer.

Science continues to break through with many astounding studies on the medicinal application of plants and their abilities to prompt the body to produce whatever is necessary for repair and survival. Thus the industry is embracing “green eco-friendly” skin care products.

But, are all botanical-based skin care products void of harmful ingredients? The following sections discuss the various types of cultivation and extraction methods utilized in obtaining plant medicine. You will see there are clear dis-

crepancies in whether an herbal ingredient still has medicinal qualities. Most personal care products that say they contain botanicals used cosmetic grade herbal extracts. The herbs are compounded and extracted with manmade ingredients, such as alcohol or propylene glycol. The ratio of botanicals in cosmetic grade ingredients is around 25 to 60 percent. Cosmetic grade herbal extracts contain a lower ratio of plant material and generally have a manmade preservation system. These synthetic ingredients cripple the potency of herbs. So the real changes you see with the skin are minimal and you run the risk of exposing yourself to ingredients that can impact your overall health.

CULTIVATION AND COLLECTION OF PLANT MATERIALS

Most of the plants used for medicinal purposes are cultivated (grown on farms). However, some may be collected from the wild. Some plants that are grown commercially for medicinal purposes are propagated vegetatively. (This means that new plants are grown from cuttings of old plants. Plants grown in this way are genetically identical to the parent plant.) Some medicinal plants are grown from selectively bred hybrid seeds, while others are varieties of plants that are unchanged from their natural form. Production of medicinal plants is generally labor intensive. In many cases, only the portions of the plant that contain the active ingredients (not the whole plant)



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are used. Sometimes harvesting involves picking leaves and flowers by hand. Tropical forests are the source of a number of plants used for medicinal purposes. One advantage to using wild plants, however, is that they are unlikely to contain any pesticide residues.

CLEANING PLANTS

After the plants are harvested or gathered, they must be cleaned and it is often done by hand. Cleaning may involve screening, washing, peeling or stripping leaves from stems. Any unnecessary parts are removed prior to drying to avoid wasting time and energy.

DRYING PLANTS

In some cases, botanicals are used for extraction while fresh, but generally, they are dried first. The purpose of drying is to reduce the water content so that the plant material does not get moldy. Most plants contain 60 to 80 percent moisture when harvested and must be dried to within 10 to 14 percent moisture before storage. A practice that has been used since ancient times is sun drying in the field. This method requires no drying equipment and uses solar energy. Plants are sometimes placed by hand on drying frames or stands where they will be air-dried in barns or sheds. This method of drying is labor-intensive and can take several weeks.

EXTRACTION METHODS

Extraction is a process whereby the desired constituents of a plant are removed using a solvent. The following describes several methods used to extract constituents from plants, including solvent extraction, supercritical gas extraction and steam distillation.

The plants are first ground and then thoroughly mixed with a solvent such as hexane, benzene or toluene inside a tank. The choice of solvent depends on several factors including the characteristics of the constituents being extracted, cost and environmental issues. The end product will contain trace amounts of residual solvent, which can be an irritant to skin and will alter the plant's medicinal properties. Once the solvent dissolves the desired substances of the plant, it is called "miscella." The miscella is then separated from the plant material. There are a number of techniques for solvent extraction, which include maceration, percolation and

NOTE: A LARGE PERCENTAGE OF SOLVENTS USED IN COSMETIC GRADE BOTANICALS ARE SYNTHETIC.

countercurrent extraction. The following is a brief description of each.

- **Maceration** – This method involves soaking and agitating the solvent and plant materials together. The solvent is then drained off. Remaining miscella is removed from the plant material through pressing or centrifuging.
- **Percolation** – With this method, the plant material is moistened with solvent and allowed to swell before being placed in one of a series of percolation chambers. The material is repeatedly rinsed with solvent until the entire active ingredient has been removed. Solvent is reused until it is saturated. New solvent is used on plant material that is almost completely exhausted, and then re-used on subsequently less exhausted batches.
- **Countercurrent Extraction** – This is a highly effective process whereby solvent flows in the opposite direction to plant material. Unlike maceration and percolation, which are batch processes, this method is continuous. Screw extractors and carousel extractors are two types of equipment used for countercurrent extraction.
- **Extraction with Supercritical Gases** – This is a method for extracting active ingredients using gases. The plant material is placed in a vessel that is filled with a gas under controlled temperature and high pressure. The gas dissolves the active ingredients within the plant material, and then passes into a separating chamber where both pressure and temperature are lower. The extract precipitates out and is removed through a valve at the bottom of the chamber. The gas is then reused. Gases suitable for supercritical extraction include carbon dioxide, nitrogen, methane, ethane, ethylene, nitrous oxide, sulfur dioxide, propane, propylene, ammonia and sulfur hexafluoride.
- **Steam Distillation** – Steam distillation is another method for extracting active ingredients from medicinal plants. The plant material is loaded onto perforated plates inside a cylindrical tank or still, and steam is injected from below. The steam dissolves the desired substances in the plant, and then enters a condenser where it is condensed back into a liquid. This condensate then passes into a flask, where the extract either rises to the top or settles to the bottom and is separated from the water. Distillation is complete when there is no more extract present in the condensate. Other minor methods for making extracts include cold pressing and the enfleurage process.

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- **Cold Pressing** – This is a process used to extract essential oils from citrus plants through pressing. The enfleurage process is the same as the technique used to make perfume from flowers: purified fats are used to extract essential oils from plant parts. Plant material is spread onto sheets of purified fat, which dissolve the essential oils. Sometimes practitioners of herbal medicine prepare extracts for immediate use. These include aqueous extracts known as decoctions, infusions or macerations. Plant material is mixed, agitated and soaked in water to dissolve the active ingredients. These ingredients make a lovely alternative to just plain distilled water.

As we continue to move in the direction of safe, yet effective skin care products it is clear that understanding the extraction methods used in the ingredients that make up your skin care products is as important as knowing the ingredients themselves. The consumer believes that the term organic or green technology means the product does not contain harmful ingredients. But that is not always the case. Green technology means insuring that all raw materials are pure from cultivation and collection to washing, drying and extraction methods. Let us face it, the skin is the largest organ and should be treated with the same principles that we treat any other organ in the body. Utilizing nutritional grade ingredients that have been developed void of harsh chemicals is the true essence of organic and green eco-friendly technology. **D**



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