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**GLYCERIN AND WATER BASED EXTRACTS FOR SKIN
AND HAIR CARE PRODUCTS**

The best solvents for skin and haircare products

Glycerin as the solvent

- Glycerin is inert, non-toxic, non-irritant, non-reactant, and safe solvent for herbal extraction.
- Glycerin extracts several bioactive components of botanical herbs like vitamins, enzymes, waxes, proteins, resins, amino acids, etc.
- Unlike organic solvents like alcohol, glycerin doesn't cause any deterioration of essential chemical constituents by denaturation (kill or sterilize).
- We at Anti-Aging Extracts use water or glycerin or a mixture of both for the extraction of our herbal extracts for maximum potency and bioactivity.

Water-based extracts

- Water is a universal, polar, and ideal solvent.
- Water is one of the only compounds that can penetrate plant cell membranes, which is perfect for extraction.
- Water is inert, non-toxic, non-irritant, and non-reactant to our skin.
- Botanical extracts contain highly sensitive and thermolabile (readily destroyed or deactivated by heat) bioactive substances which are preserved by extraction with water.
- Water extraction prevents the denaturation (killing) of natural active elements of plants.
- Solvents like alcohol destroy the usefulness of bioactive substances of botanical extracts through denaturation.
- We at Ant-Aging Extracts use water and glycerine as solvents for maintaining the potency, efficacy, and usefulness of bioactive material.

GLYCERIN AS THE SOLVENT

Healthful compounds in herbs or botanicals can be isolated from the cellulose and plant material when they are combined with a solvent. The desired plant parts dissolve within the solvent. The selection of solvent is essential when there is the extraction of botanical herbs or extracts. Because herbal extracts contain highly sensitive components of interest like enzymes, proteins, resins, vitamins, etc., use of organic solvents such as alcohol can deteriorate the essential bioactive components by denaturation. Solvents like glycerin, water or mixture of both are the solvents of interest for herbal extraction for making antiaging cosmetics.

SOLVENT POWER and SOLUBILITY have caused glycerine to be regarded as one of the most valuable compounding ingredients for the formulator. Besides functioning as a suitable solvent for the active principles in a formulation, the natural compatibility of glycerine with many other substances affords the formulator a wide choice of ingredients.

The-compatibility of glycerine with a wide range of other materials has been established through extended use and empirical tests. Glycerine is a highly compatible material, especially

in cosmetic and pharmaceutical products which may incorporate many compounds of different chemical structure and properties.

Glycerine may be used on every part of the epidermis, including mucous membranes. When diluted to a concentration below 50%, it acts as an emollient and demulcent, finding essential applications in ointments and lotions. Preparations for the most sensitive areas of the body-antiseptic, vaginal, nasal, analgesic. Dermatological, and burn ointments and jellies-are commonly made of water-soluble bases compounded with glycerine. Glycerine, too, is one of the most widely used ingredients in medical prescriptions. Only water may exceed glycerine in its range of applications.

A study published in the Journal of Acta Dermato-Venereologica evaluated glycerin's ability to make the skin smoother. Results show that glycerin gradually improved skin texture and suppleness, and continued to do so even after it was no longer applied, indicating that it has lasting effects despite a slow onset of action

Glycerin is a safe and effective preservative and aseptic (free from contamination caused by bacteria, viruses or other harmful microorganisms) agent when produced according to stringent standards that use the highest quality ingredients available.

There are several benefits of glycerin:

- Glycerin is inert, non-toxic, non-irritant and non-reactant solvent.
- Glycerin is aseptic and is therefore not harmful. It is a safe and natural preservative for botanical extracts.
- Glycerin harnesses various herbal and botanical biomolecules and microorganisms that would otherwise be destroyed due to the sterilizing and denaturing property of alcohol.
- Herbs and botanicals have several desirable components within their cells. Some of these, such as enzymes, etc., are only valuable in their live state. Alcohol sterilizes and denatures, a process that affects living cells and kills them. Vegetable glycerin preserves aromatics, enzymes, and polysaccharides.
- Unlike alcohol, glycerin encapsulates extracted constituents and compounds within its molecular matrix. This is beneficial in that it reduces ingredient precipitation (meaning that the components suspended in glycerin stay there) and slows oxidation.
- Vegetable glycerin is the only solvent that preserves the natural taste factors which are essential to the efficacy of an herb.

To preserve the biological viability and synergy of a botanical's extracted constituents' glycerin is preferred for extraction of all aromatic-based compounds and polysaccharides, as it does not denature or render inert these highly complex molecule structures, which though these compounds may retain their aroma/taste quality, any denaturing (as alcohol intrinsically does) will substantially reduce or nullify the therapeutic quality of aromatic-based compounds. The biological viability preserving, and synergy are sparing effects of glycerin also apply to proteins, certain vitamins, enzymes, and other 'co-factor' constituents that are glycerin extracted from botanicals.

We at Anti-Aging Extracts do not use the tincture method, which requires high heat, but the following is pertinent information on glycerin/glycerites. When glycerin is utilized in a dynamic contemporary non-tincturing based innovative processing methodology it has been shown to not only extract a wide range of compounds, it is widely accepted, both in literature and innovative applications, to extract many constituents and compounds previously thought

not able to do and to extract those constituents and compounds at high concentrations and potency. This includes most alkaloids, glycosides, volatile oils, waxes, resins, gums, balsam, sugars (especially as non-denatured linked and cross-linked polysaccharides), vitamins, and minerals, all with none of the denaturing and inert rendering effects alcohol possesses.

Glycerin works in tandem with water in our solvents because it is natural alcohol, that doesn't denature (kill) the bioactive (living components) and can, therefore, be used to dissolve many compounds that water cannot dissolve. We use a mixture of water and glycerin as a solvent because it is safe, and versatile as far as the dissolution of botanical extracts (and other components of antiaging) is concerned. We also use this mixture because it increases the life of all the beauty products. Water-glycerin mixture is better as a solvent than water-alcohol because even though they are both valid, glycerin is better than alcohol because it preserves herbal and botanical microorganisms and bioactive properties of the plant, while alcohol, on the other hand, kills many of these microorganisms, proteins, and enzymes, which are necessary for the effective working of antiaging extracts.

WATER AS THE SOLVENT

Water is also known as the Universal solvent because water has the capability to dissolve several chemical substances. It is one of the great properties of water that it retains the efficacy (success) and potency of bioactive natural constituents of an extract. Water is an ideal solvent, and it has all those qualities which a perfect solvent should have like water is inert, cost-effective, and non-toxic, non-irritant, and non-reactant to our skin as well as to chemical substances. Water is a polar solvent, because of the availability of positive charge (hydrogen) as well as negative charge (oxygen). And due to this polarity water dissolve more substances than any other solvent. Despite its name as a universal solvent, it is not possible that every single compound can be dissolved by water. There are some compounds like non-polar substances (hydrophobic or water-hating or lipophilic or lipid-loving) such as fats, oils, waxes, etc. are not going to be dissolved by water.

With reference to the botanical extracts, it is the beauty of water as a solvent that it extracts the active substances (or more appropriately bioactive substances) without denaturing them, unlike of other harmful solvents such as alcohol. Denaturation is the process in which proteins /enzymes /hormones /nucleic acid /vitamins etc. are destroyed by the application of external stress like strong acid or organic solvent like alcohol. Alcohol denatures botanical cells by bursting the cell.

We at Anti-Aging Extracts use water and glycerine as solvents for our botanical extracts to preserve the efficacy and usefulness of bioactive compounds. We use a multi-stage extraction process, a combination of maceration, digestion, mixing, pumping, optimum temperatures for the extraction with water. We take steps to protect the thermolabile bioactive substances like enzymes, proteins, vitamins, etc. Thermolabile substances are those which are heat sensitive or destroyed by excessive heat. Maceration is the extraction technique in which there is just the soaking or immersing of plant parts in a liquid (usually water) in an airtight container for a specified time at room temperature (without applying heat). Digestion uses gentle heat, well under 106° Fahrenheit. Thus, conclusively, we can say that water preserves the usefulness of

value-added constituents of botanical extracts without denaturing them unlike organic solvents such as alcohol.

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