A REVIEW: HERBS USED AS MOISTURIZING CREAM FOR SKIN TREATMENT

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ABSTRACT

The main skin problems include acne pimples, wrinkle, dryness, psoriasis, etc. Proper skin care is necessary for treating these problems. The natural herbal products are in demand to control skin problems. The natural herbs are harmless as they don't have side effects. They also have low mammalian toxicity and can be handled safely. The formulation of present invention consists of a mixture of glycerine, olive oil, Aloe vera, glycerol monostearate, stearic acid, propylene glycol, methyl paraben, propyl paraben, triethanolamine, beeswax, essential oils and rose water. A combination of Aloe vera with essential oils in cream base can be used as a potential herbal cream which can be effectively used in protection of skin. Natural based products extracted from plants or herbs are believed to contain antioxidant, free-radical scavenging agents that can neutralize the effects of free-radical damage. Additionally, they contain agents that stimulate the synthesis and restoration of damaged connective tissue structures in the dermis and barrier function in the epidermis.

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INTRODUCTION

In spite of the various anti-aging cosmetic products in market for the treatment of skin, there remains a need for effective topically applied cosmetic compositions that provide anti-aging or rejuvenating benefits to the skin, using natural ingredients as active components.¹ To cope up with these demands, formulators of cosmetic products are introducing novel delivery systems (liposome’s, ethosomes, and emulsions) into cosmeceutical formulations having multifunctional herbal constituent that focus on treatment effectively. Cosmaceuticals has been used to describe the products that yield benefits traditionally and active constituents thought to be cosmetic in nature, such as moisturization, as well as product that make marketing claims approaching those of drug products, such as reducing wrinkles, regenerates skin, firms, heal and penetrates into skin. New terminology is considered now a day in Japan i.e. “quasi drug”². Functional ingredients and smart delivery systems are driving interest in health and beauty aid products. They combine the benefits of natural herbal ingredients with the elegance, skin feel and delivery systems of cosmaceuticals³. A significant number of novel products are based on a new generation of active ingredients. The benefits and improvements to the aesthetic appearance of skin can be manifested in any of the following: reduction in pore size, fine lines, wrinkles, tactile roughness, improvement in skin tone, radiance, clarity, tautness; promotion of anti-oxidant activity; improvement in skin firmness, plumpness, suppleness, and/or softness; improvement in procollagen and collagen production; increase in skin elasticity. Main challenge lies to combine several actives into a single cosmetic formulation.

Multifunctional Herbal Products

Multifunctional herbal products contains active constituents which posses many effective properties for example hyaluronic acid (hydrates skin, as moisturizer); vitamin C, E, A⁴ (antioxidant, rejuvenates skin, Enhance firmness of skin); naturals like almond oil and olive oil (moisturizers, supple skin, antioxidant properties, reduce appearance of wrinkles); extracts of Azadirachta indica (treatment of skin diseases like psoriasis, eczema, acne, wrinkles, treating hair problems) ; Aloe Vera (natural moisturizer, sunscreens, rejuvenate cells); and other naturals like flavonoids and polyphenols (strengthens collagen fiber, protects from sun damage). Numbers of herbs are reported in literatures that are used for treatment of wrinkles are given in (Table 1). These naturals when synergized within smart vesicular systems targeted at required level of skin results in remarkable and satisfactory effects leads to development of optimized formulation.

Introduction to Wrinkle

Skin is directly affected by surroundings and has important functions to maintain circumstance of the inner part of living bodies. Although there is not so much that all of the skin is deactivated, skin is an organ that aging symptoms such as wrinkle, liver spot, dull, slack, etc. are liable to appear thereon, and these symptoms are particularly
remarkable at an exposed portion that is exposed to sun light. When aging of the skin proceeds, protection against stimulus such as oxidative stress, etc. becomes weak, this causes disturbance of internal circumstance of the skin, whereby the skin aging further proceeds. In particular, at the exposed portion, the skin is usually exposed to potent oxidative stress. Research shows that there are, in fact, two distinct types of aging. Aging caused by the genes we inherit is called intrinsic (internal) aging. The other type of aging is known as extrinsic (external) aging and is caused by environmental factors, such as exposure.

Intrinsic Aging: also known as the natural aging process is a continuous process that normally begins in our mid-20s. Within the skin, collagen production slows, and elastin, the substance that enables skin to snap back into place, has a bit less spring. Dead skin cells do not shed as quickly and turnover of new skin cells may decreases slightly. While these changes usually begin in our 20s, the signs of intrinsic aging are typically not visible for decades. Genes control how quickly the normal aging process unfolds. Some notice those first gray hairs at age of 20s; others do not see graying until their 40s. People with Werner’s syndrome, a rare inherited condition that rapidly accelerates the normal aging process, usually appear elderly at age of 30s. Their hair can gray and thin considerably in their teens. Cataracts may appear at age of 20s.

Extrinsic Aging: A number of extrinsic, or external, factors often act together with the normal aging process to prematurely age our skin. Most premature aging is caused by sun exposure. Other external factors that prematurely age our skin are repetitive facial expressions, gravity, sleeping positions, improper diet, stress, nutritional deficiencies, and repeated facial movement.

Causes of extrinsic aging

The Sun: Without protection from the sun’s rays, just a few minutes of exposure each day over the years can cause noticeable changes to the skin. Freckles, age spots, spider veins on the face, rough and leathery skin, fine wrinkles that disappear when stretched, loose skin, a blotchy complexion, actinic keratoses (thick wart-like, rough, reddish patches of skin), and skin cancer can all be traced to sun exposure. “Photoaging” is the term dermatologists use to describe this type of aging caused by exposure to the sun’s rays. The amount of photoaging that develops depends on: (a) Person’s skin colors (b) Their history of long-term or intense sun exposure. People with fair skin who have a history of sun exposure develop more signs of photoaging.

Facial Expressions: Repetitive facial movements lead to fine lines and wrinkles. Each time we use a facial muscle, a groove forms beneath the surface of the skin, which is why we see lines form with each facial expression. As skin ages and loses its elasticity, the skin stops springing back to its line-free state, and these grooves become permanently etched on the face.

Gravity: It constantly pulls on our bodies. Changes related to gravity become more pronounced as we age. In our 50s, when the skin’s elasticity declines dramatically, the effects of gravity become evident. Gravity causes the tip of the nose to droop, the ears to elongate, the eyelids to fall, jowls to form, and the upper lip to
disappear while the lower lip become more pronounced.

**Sleeping Positions:** Resting your face on the pillow in the same way every night for years on end also leads to wrinkles. Called sleep lines, these wrinkles eventually become etched on the surface of the skin and no longer disappear when the head is not resting on the pillow. People who sleep on their backs do not develop these wrinkles since their skin does not lie crumpled against the pillow.

**Smoking:** Cigarette smoking causes biochemical changes in our bodies that accelerate aging. Research shows that a person who smokes 10 or more cigarettes a day for a minimum of 10 years is statistically more likely to develop deeply wrinkled, leathery skin than a nonsmoker.

**Diet:** It can significantly affect the skin and its tendency to wrinkle. Researchers from Monash University studied the diets of 453 people (aged 70 years and over, from Australia, Greece and Sweden) to see if foods are associated with skin wrinkling. The findings strongly suggest that a high intake of fruits, vegetables and fish as well as certain healthy fats can protect against wrinkles.

**Foods that promote wrinkles** are Saturated fats, Meat (especially fatty processed meats), full-fat dairy products (especially unfermented products and ice cream), Soft drinks and cordials cakes, pastries and desserts potatoes, butter, margarine, Vitamin C supplements.

**Effect of external factors:** It plays a chief role in wrinkles, skin discolorations and degenerative skin conditions. Exposure to sunlight and UV radiation are major factors resulting in skin damage, accounting for 90% of the symptoms of premature aging. Importantly, exposure to oxygen, sunlight, and other environmental or lifestyle stresses induces the formation of free radicals. Free radicals can cause wrinkles by activating metalloproteinase, such as collagenase, that are responsible for breaking down the skin's connective tissues (collagen and elastin), thus result is premature aging. Free-radical damage can also cause a reduction in the thickness of the dermal layer. This can cause the skin to slacken. The slackening of the skin is the first and most visible sign of aging and a cause of wrinkles and lines.

**Introduction to dosage form**
A moisturizing cream is essential to any anti-wrinkle treatment plan. Daily moisturizing of the skin will make it softer, vibrant, and healthier and thus cream could be formulated by having all ingredients natural oils even there is no need to add preservative because ethanol itself act as preservative. So the cream can be formulated by taking natural ingredients like olive oil, almond oil, and tocopherol and neem oil, soya meal powder and for base we can use cocoa butter or bees wax and lanolin.

**Olive oil:** contains triacylglycerols and small quantities of free fatty acids, glycerol, pigments, aroma compounds, sterols, and tocopherols, phenols, unidentified resinous contains protein, minerals and vitamins. Also the presence of phenols, tocopherols and other natural antioxidants prevent lipid oxidation within the body eliminating the formation of free radicals which may cause cell destruction. It has anti-inflammatory and healing virtues as well as anti-oxidative and regenerative
properties. Due to its molecular structure, which is similar to that of human sebum, it is vital for skin nourishment and protection. Perfectly absorbed by the skin, it improves the quality of the sebum, for a smooth, supple texture. Olive Oil softens the skin, tones it and is highly beneficial for stressed or damaged skin. It reduces skin damage caused by pollution and UV radiation, therefore protecting the skin from photo aging. It also improves skin hydration and elasticity\textsuperscript{12}

**Almond oil (Prunus amygdalus):** It is a extracted from almond kernels and is an excellent emollient that keeps our skin away from drying. It is also one of the best cosmetic ingredients and because its molecules are way smaller than our human tissue molecules, they can penetrate deep beneath the skin up to 7 layers so that the moisturizing effect is beyond skin deep. Its fine texture makes it completely safe for all skin types. Apart from its emollient properties, it also soothes and softens our skin. Regular application of almond oil will restore the youthful glow to our skin and simultaneously\textsuperscript{13}.

**Cocoa butter:** Theobroma cacao – natural, edible oil extracted from the cacao bean. A highly stable fat, rich in antioxidants with a long storage life, it is an excellent emollient renowned for its skin softening properties. used for skin-care products, bath oils, night creams, suntan preparations, and lip make-up.

**Sandalwood oil:** It is a beneficial skin treatment and used in a range of skin and hair care products. The oil is widely valued in perfumery in India. As a cosmetic it has moisturizing, astringent, antiseptic, balancing and stimulating properties. It is useful for treating skin rashes, stretch marks, nail problems, dry skin, skin regeneration, smoothing wrinkles.

**Glycerin:** This humectants is found in both vegetable and animal oils and has been long used as an important beauty ingredient because of its ability to draw water from the air to moisturize our skin. It is such an outstanding water-attracting and binding agent that application of glycerin on our skin would keep our skin hydrated throughout the day. In fact, glycerin attracts just the right amount of moisture to maintain the skin’s homeostasis and fills in the intercellular matrix of the skin (thus plumping it up in a good way). Its presence in the intercellular layer helps other lipids do their job better and is actually present in all natural lipids. It also helps products spread better and is a menstrum, which helps with the absorbability of medicinal plants.

**Aloe Vera:** It is a famous soothing component, cooling down heat reactions in the skin. Not less significant is its beneficial influence on Collagen, as it improves its quality. Collagen type-I is the first one to be affected by external aggression. It have an emollient qualities and is useful for almost any skin condition that needs calming, soothing, hydration and has remarkable healing properties that can draw and hold oxygen to the skin. It is one of the most effective cellular renewal ingredients available.

**Beeswax:** It used as a highly nourishing substance, containing numerous fatty acids, minerals and vitamins, especially vitamin A. Rich in glucose; it provides the skin with energy, protection and a soft, supple texture, helping it retain its delicate
moisture balance. As an anti-inflammatory agent, Beeswax is highly beneficial in the treatment of rheumatic and muscular aches and pains. Beeswax is not absorbed into the skin, so it primarily protects the surface of the skin and traps water on the surface. It is also thickener, but is primarily used as an emulsifier in many cosmetics including baby creams, and is also a natural sun protectant.

**Vitamin-E (Tocopheryl acetate):** Act as a powerful anti-oxidant and a vital ingredient in the protection of the skin from sun-rays. It is also effective in neutralizing free radicals that are formed by oxidation resulting from exposure to air pollution, sun radiation, etc. Vitamin E stabilizes membrane lipids and, once it penetrates the skin, it concentrates in the skin-cell membranes, the most oxidation prone part of the skin. Synergetic property of tocopherol observed along with neem extract.

**Lecithin:** It is obtained from soybean oil. The uses of phospholipids in cosmetic products are many - they are superior skin restorative agents, moisturizers and have the remarkable ability to penetrate the epidermis (top layer of the skin) and carry substances to the cellular level and also act as an antioxidant.

**Lanolin (Ovis Aries):** These are natural skin friendly cream excipients that is powerful in holding moisture, maintains moisture and water of skin, easily absorbed by a dry skin and penetrates to deeper level of skin maintains skin in healthy condition.

**Formulation of cream:** Water in oil emulsion cream prepared by initially melting bees wax at 60-70°C, and then to this added Stearic acid, Vetiver oil, olive oil, Glycerol monostearate, and Methyl Paraben, Propyl Paraben. Aqueous phase along with aloe vera gel taken and heated at 50°C, to this added glycerine, rose water, and after cooling up to 40°C, sandalwood stick aq. extract added to it. Both the phases were mixed continuously for homogenous dispersion, and cooled slowly, for fragrance peppermint oil and sandalwood oil added. Contents were given in Table-2.

**Analysis of cream**

**Net content:** Intact container weighed at the beginning of analysis. After the analysis is completed, remaining sample was removed from container and weight of empty container taken. The weight of the product was calculated by difference.

**Description of cream:** Color and odour of the cream noted carefully.

**pH of cream:** 1 gm of cream mixed with 9 ml of water and pH of the resulting mixture taken with a pH meter.

**Non-volatile matter at 105°C:** 1 gm of cream was taken in glass bottle and kept in an oven at 105°C for 2 hour.

**Acid value:** 10 gm of substance dissolved in accurately weighed, in 50 ml mixture of equal volume of alcohol and solvent ether, the flask was connected to reflux condenser and slowly heated, until sample was dissolved completely, to this 1ml of phenolphthalein added and titrated with 0.1 N NaOH, until faintly pink color appears after shaking for 30 seconds.

Acid value = n *5.61/w
### Table 1

**Herbs used for treatment of wrinkles**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Scientific name</th>
<th>Common name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Rosmarinus officinalis</em></td>
<td>Rosemary</td>
</tr>
<tr>
<td>2</td>
<td><em>Centella asiatica</em></td>
<td>Bacopo moneria</td>
</tr>
<tr>
<td>3</td>
<td><em>Ocimum sanctum</em></td>
<td>Tulsi</td>
</tr>
<tr>
<td>4</td>
<td><em>Vaccinium myrtillus</em></td>
<td>Bilberry</td>
</tr>
<tr>
<td>5</td>
<td><em>Hoaagophytum procumbens</em></td>
<td>Devil’s claw</td>
</tr>
<tr>
<td>6</td>
<td><em>Sambucus nigra</em></td>
<td>Elder flowers</td>
</tr>
<tr>
<td>7</td>
<td><em>Mentha piperita</em></td>
<td>Peppermint leaves</td>
</tr>
<tr>
<td>8</td>
<td><em>Vinca minor</em></td>
<td>Periwinkle</td>
</tr>
<tr>
<td>9</td>
<td><em>Lavendula augustifolia</em></td>
<td>Lavender</td>
</tr>
<tr>
<td>10</td>
<td><em>Origanum vulgare</em></td>
<td>Oregano</td>
</tr>
<tr>
<td>11</td>
<td><em>Thymus vulgaris</em></td>
<td>Thyme</td>
</tr>
<tr>
<td>12</td>
<td><em>Crataegu laevigata</em></td>
<td>Hawthorn</td>
</tr>
<tr>
<td>13</td>
<td><em>Prunus laurocerasus</em></td>
<td>Cherry laurel leaves</td>
</tr>
<tr>
<td>14</td>
<td><em>Glechoma hederacea</em></td>
<td>Ground ivy</td>
</tr>
<tr>
<td>15</td>
<td><em>Aloe vera</em></td>
<td>Aloe gel</td>
</tr>
<tr>
<td>16</td>
<td><em>Azadirachta indica</em></td>
<td>Neem extract</td>
</tr>
<tr>
<td>17</td>
<td><em>Vitis Vinifera</em></td>
<td>Grape seed extract</td>
</tr>
<tr>
<td>18</td>
<td><em>Prunus dulcis</em></td>
<td>Almond oil</td>
</tr>
<tr>
<td>19</td>
<td><em>Helianthus annus</em></td>
<td>Sunflower oil</td>
</tr>
<tr>
<td>20</td>
<td><em>Olea europoea</em></td>
<td>Olive oil</td>
</tr>
<tr>
<td>21</td>
<td><em>Simmondsia chinensis</em></td>
<td>Jojoba oil</td>
</tr>
<tr>
<td>22</td>
<td><em>Carica papa</em></td>
<td>Papaya</td>
</tr>
<tr>
<td>23</td>
<td><em>Dacus carrota</em></td>
<td>Carrot powder</td>
</tr>
</tbody>
</table>

### Table 2

**Ingredient of prepared cream**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Ingredient</th>
<th>Wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bees wax</td>
<td>4.50</td>
</tr>
<tr>
<td>2</td>
<td>Stearic acid</td>
<td>3.50</td>
</tr>
<tr>
<td>3</td>
<td>Glycerol monostearate</td>
<td>7.00</td>
</tr>
<tr>
<td>4</td>
<td>Olive oil</td>
<td>25.00</td>
</tr>
<tr>
<td>5</td>
<td>Aloe vera gel</td>
<td>11.00</td>
</tr>
<tr>
<td>6</td>
<td>Rose water</td>
<td>20.00</td>
</tr>
<tr>
<td>7</td>
<td>Glycerine</td>
<td>14.00</td>
</tr>
<tr>
<td>8</td>
<td>Triethanolamine</td>
<td>1.50</td>
</tr>
<tr>
<td>9</td>
<td>Propylene glycol</td>
<td>6.00</td>
</tr>
<tr>
<td>10</td>
<td>Geranium oil</td>
<td>0.50</td>
</tr>
<tr>
<td>11</td>
<td>Sandalwood oil</td>
<td>0.50</td>
</tr>
<tr>
<td>12</td>
<td>Vetiver oil</td>
<td>0.50</td>
</tr>
<tr>
<td>13</td>
<td>Methyl Paraben</td>
<td>0.20</td>
</tr>
<tr>
<td>14</td>
<td>Propyl Paraben</td>
<td>0.20.</td>
</tr>
</tbody>
</table>
Where, n = the number of ml of NaOH required., w = the weight of substance.

**Saponification value:**

2 gm of substance refluxed with 25 ml of 0.5 N alc. KOH for 30 minutes, to this 1 ml of phenolphthalein added and titrated immediately, wit 0.5 N HCl.

Saponification value = \((b-a)\times28.05/w\)

Where, The volume in ml of titrant = a, The volume in ml of titrant = b, The weight of substance in gm = w.

**Storage-physical stability of cream:** The ability of cream to maintain its consistency was determined by keeping it at 25 ± 2 (room temperature, RT), at room temperature kept for 30 days and observations evaluated.

**Thin layer chromatography:**

Thin layer chromatography of cream done by dissolving cream in ethanol and by taking mobile phase in ratio (Chloroform: ethyl acetate: formic acid) in ratio (5: 4: 1), and spots were visualized by UV chamber at 366nm.

**Patch irritation test:**

0.5 gm of cream of each batch applied on the back of volar arm with the help of surgical gauze of volunteers and the erythematic score was determined using the scale defined in the Indian Standards.

**Cutometer:**

Biochemical properties of skin were assessed by cutometer. Study was done over twelve volunteers (10 males, 2 females) having age of 22-30years. Only those novel creams and their conventional preparations are selected for comparison, which are accepted by volunteers and which are easy to handle in terms of stability among all.

Cream was applied twice a day once in morning (10.00a.m) and once in evening (5.00p.m) over fore arm of twelve volunteers (22-30yrs) up to 6weeks and reading of volunteers were taken at an interval of 2 weeks with the help of cutometer (Model MPA. 480). This device measures the deformation of a skin area submitted to a mechanical suction and its recovering potential. The probe used had a diameter of 2mm and the strain and relaxing time were 2s with a pressure of 400mbar and assessment of properties like overall elasticity, biological elasticity, firmness of skin done as a result and recovery rate of skin deformation, these properties are related to efficiency of cream to have antiwrinkle property.

**SUMMARY**

The present invention relates to a herbal cream formulation for skin care. Since the components in the formulation are from herbal source, it is very safe and ecofriendly and do not produce any adverse effect. The herbal skin care compound of the invention helps in revitalizing the skin and keeping skin smooth, supple and soft, protecting skin from environmental pollution, minimizing the effects of sunburn and chapping and reducing the effects of dryness. Wrinkle caused by environmental factor especially due to UV rays, which causes generation of free radicals are harmful because these reduces charm of face in the early age of life and reduces confidence and many a times its chronic effect results in skin cancer. Survey reveals that almost 90% of premature skin
ageing leads to skin cancer, hyper pigmentation and atrophy. There are number of synthetic and natural actives until now discovered to treat wrinkle, but many of the synthetic chemicals like one of the most favored one i.e. lipoic acid, mallic acid, citric acid these all used for wrinkles but decreases pH of skin, leads to irritation many a times and makes skin more sensitive, and there are many naturals active also which are not safe to use like Centella asciatica use for treatment of wrinkle but causes dermatitis at higher concentration.

CONCLUSION
The product is highly effective for dry/dehydrated skin, cuts/wounds/burns and revitalization (soft and smooth) of facial skin. It can also be used for dark patches/circles on face. Two weeks use is recommended for all such cases. The aroma of the product as one of the synergistic effects of the blended oils has been liked by the individuals observed for study. The survey has shown an overall encouraging result.

REFERENCES
3. Ashawat MS, Saraf S and Swarnlata Saraf. Biochemical and histopathological studies of herbal cream against UV radiation induced damage. Trends in Medical Research, 2007; 2(3).
