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QUALITY CONTROL, STANDARDIZATION AND FORMULATION OF *Nyctanthes arbor tristis*

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Abstract*: Nyctanthes arbor tristis* is well known for its fragrance and white orange flowers. Nyctanthes arbor tristis is commonly known as Night jasmine, Parijat, Harsinghar. The present study on this plant was performed to show the phytochemical activity of the extract of leaves of *Nyctanthes arbor tristis*. For this study, crude powder of leaves extract were taken. Successive solvent extraction method in a soxhlet extractor using different (hexane,benzene,acetone,water) was performed. The phytochemical screening was carried out on different extract solvents and observed. From this data investigated above, a herbal cream using *N.arbor tristis* was formulated. The herbal cream was formulated for nourshing and moisturing the skin. Evaluation parameters like stability, organoleptic properties, pH, homogeneity were performed.

Keywords: Nyctanthes arbor-tristis, Soxhlet extraction, Phytochemical screening, Herbal cream

Introduction*: Nyctanthes arbor-tristis* belonging to the family *Oleaceae* is a plant having high medicinal value in Ayurveda. *N .arbor-tristis* is a small sacred ornamental plant known across the country for its's beautiful fragrance and white flowers. *N. arbor-tristis* is also known as Parijata in sanskrit, har-singhar in hindi, and Night jasmine in english. In India, it is widely distributed in sub-Himalayan region, tracts of Jammu and Kashmir, Nepal to east of Assam, Bengal, also found in Indian gardens as ornamental plant. Different parts of this plant are used for various pharmacological actions like anti-viral, anti-fungal, anti-histaminic, anti-malarial, anti-inflammatory, skin infections, etc[1].

The present study was undertaken to investigate the phytochemical analysis of the leaves extract of N arbor tristis. The extraction of leaves was carried out by successive solvent extraction method by using different solvents of Hexane, Benzene, Aceton and Water. The phytochemical screening was performed on different extract of leaves and the secondary metabolites present in the plant were observed[4].

As, *Nyctanthes arbor tristis* have many medicinal properties, a herbal cream using aqueous extract of leaves was formulated. The cream was formulated for nourshing and moisturizing the dry skin.The cream was formulated using extract of *N.arbor tristis leaves* and Myristica fragrans (nutmeg) and vitamin E. Evaluation parameters were performed to check the stability of cream[7].

Plant profile:

Fig1. ***Nyctanthes arbor tristis*** **a) plant b) leaves**

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Name of the plant: *Nyctanthes arbor tristis*
Synonym: Night jasmine, Parijat
Family: *Oleaceae*
Kingdom: Plantae
Order: Lamiales
Genus: Nyctanthes
Species: N.arbor-tristis
Phytochemical constituents of leaves: Leaves contain D-mannitol, β-sitosterole, flavanol glycosides, astragaline, oleanolic acid, nicotiflorin nyctanthic acid, tannic acid, ascorbis acid, methyl salicylate, amorphous glycoside, amorphous resin, trace of volatile oil, carotene, lupeol, mannitol, glucose, fructose, iridiod glycosides, benzoic acid[3].
Macroscopy
Colour: Dark green
Odour: Indistinct
Taste: Bitter and astrigent
Leaf: Simple, 11-6 cm long, 6-4 cm wide, both surfaces are rough
Venation: Reticulate venation, more conspicuous on lower side of the leaf
Margin: Distinctly toothed margin
Materials and Methods:
Collection of plant sample: The fresh plant leaves were collected from local place of karanjade village of raigad district, Maharashtra. The fresh leaves sample was washed, dried and then homogenized to fine powderand stored in closed container.
Preparation of leaves extract: The dried powder of leaves was weighed and about 20 grams of powder was used in soxhlet extraction. The successive solvent extraction was performed using Hexane, Benzene, Acetone, and Water as solvents.
Extraction procedue:
Soxhlet extraction

- Weigh 20g of the dried leave powder and pack into the pouch by making sachet.
- Place the sachet into the soxhlet thimble.
- Flow of water should maintain through condensor.
- Solvent for extraction kept in a round bottom flask and temperature should be maintained according to the boiling point of respective solvent.
- Solvents for extraction are taken as per their polarity according to eluotropic series.
- When solvent starts boiling the vapours are released and gets condensed by condenser which falls into the soxhlet thimble.
- There is penetration of solvent through sachet and after reaching a specific point it falls back round bottom flask siphon tube and process continued till successive extraction is achieved.
- For water soxhlet extraction is not suitable, instead the decoction process is used.

Decoction

- Take water in a breaker and add the dried powder of plant to it.
- Boil it for 15 mins at 100°c temperature on electric water bath.
- Then cool it to room temperature.
- Filter the liquid by pressing the marc using muslin cloth.
- Collect the filtrate and evaporate it in a china dish on water bath.

Phytochemical screening: Phytochemical screening was performed as per the procedure priscribed by Khandelwal.K & Sethi.V, 2016[4]
Formulation of Herbal Cream

Chemicals

Sr No	Ingrdients	Uses
1	Vitamin E	Protect from UV radiation, antioxidant, antiwrinkle
2	Nyctanthes arbor-tristis Extract	Antioxidants, antihyperlipidemic, antibacterial, antifungal
3	Nutmeg Extract	Flavouring agent, Carminative, antispot
4	Petroleum Jelly Base	Moisturizer
5	Rose water	Flavouring agent, cooling agent, emollient
6	Apple Cider Vinegar	Antifungal, antibacterial, antioxidant, antiseptic
7	Methyl Paraben	**Preservative**
8	Propyl Paraben	**Preservative**
9	Cetyl Alcohol	Emollient
10	Steric Acid	Emulsifier

Procedure of Herbal Cream[7]
Preparartion of *N.arbor tristis* extract: Take accurately 0.5g of dried leaves powder and add 5 ml of distilled water to it. Heat them on electric water bath at 100°c for 15 minutes. Filtrate the extract using filter paper.

Preparation of nutmeg extract: Grind nutmeg and weigh accurately 0.5g of nutmeg powder. Take the 0.5g powder and add 5 ml distilled water to it. Heat them on electric water bath at 100°c temperature for 15minutes. Filtrate the extract using filter paper.

Formulation of cream:

1)The emulsifier(stearic acid) and other oil soluble components(cetyl alcohol, petroleun jelly, vitamin E, apple cider vinegar) were dissolved in oil soluble phase (phase A)and heated to 75°c.

2) The preservatives and other water soluble components(N.arbor tristis extract, nutmeg extract, rose water, methyl paraben, propyl paraben) were dissolved in aqueous phase (pase B) and heated to 75°c.

3) Both phases were heated simultaneouly.

4) After heating, the aqueous phase was added in portions to the oil phase with continous stirring until emulsifier is cooled.

Composition of Cream:

Sr.no	Ingredient	Quantity
1	Vitamin E	1 g
2	Night Jasmine Extract	0.5 g
3	Nutmeg Extract	0.5 g
4	Petroleum Jelly Base	5 g
5	Rose water	0.5 ml
6	Apple Cider Vinegar	0.2 g
7	Methyl Paraben	0.028 g
8	Propyl Paraben	0.029 g
9	Cetyl Alcohol	3 g
10	Steric Acid	2 g
11	Distilled Water	10 ml

Result and discussion:

Phytochemical Screening of Nyctanthes Arbor Tristis Using Different Solvents:

Sr.no	Test	N-hexane	Benzene	Acetone	Water
1	Carbohydrate	-	-	-	+
2	Proteins	-	-	-	+
3	Amino Acids	-	-	-	+
4	Fats And Oil (Fixed Oil)	+	+	-	-
5	Steroid	-	-	-	-
6	Saponine Glycosides	-	-	-	+
7	Tannins And Phenolic Compound	-	-	+	+
8	Alkaloids	-	-	-	+
9	Gums	-	-	-	+
10	Mucilage	-	-	-	+

Evaluation of Cream

Sr.no	Parameter	Observation
1	Colour	White
2	Odour	Pleasant
3	Homogeneity	Homogenous both visually and by touch
4	Thermal stability	No oil separation
5	Ease of removal	Easily removed by washing with water
6	pH	6.56

Fig2. Final Cream

In the present study, the plant of N.arbor tristis was collected and dried and then subjected to phytochemical screening.The phytochemical screening was performed and the observation showed the secondary metabolites present in the plant. The n-Hexane extract shows presence of Phytosterols, fixed oils and fats wereas Benzene extract shows presence of fixed oils and fats. The Acetone extract shows presence of Phytosterols, tannins, phenolic compounds wereas Water extract shows Alkaloids, carbohydrates and glycosides, Saponins, phenolic,tannins, proteins, Amino acids, Gums, Mucilage. We conclude that the different extract of plant have many secondary metabolites present in them.

The herbal cream formulated was tested for evaluation parameters which shows that cream was smooth, homogenous, consistent, having no harmful effects on skin. It has neutral pH suitable for skin. The herbal cream

moisturizes skin and also smoothens it and helps to prevent dry skin.

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