IJBPAS, September, 2016, 5(9): 2097-2103

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

FORMULATION, VALIDATION AND *INVITRO* EVALUATION OF ANTI AGING SKIN CREAM CONTAINING *SYZYGIUM CUMINI* EXTRACT

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Received 24th May 2016; Revised 22nd June 2016; Accepted 2nd August 2016; Available online 1st Sept.

ABSTRACT

The process of skin aging occurs naturally due to the overtime change in the skin elasticity nature and also due to external factors like exposure to UV radiation. High exposure of pollution and sunlight causes the formation of reactive oxygen species (ROS), the ROS reacts with DNA, proteins and fatty acids causing the impairment of antioxidant system and oxidative damage. The predominant skin diseases such as wrinkles, aging etc., were due to formation of ROS in skin. Anti aging skin creams were used to overcome skin diseases due to ROS. Chemicals used in such anti aging creams are not up to the mark par excellent. So it is effective to use plants as derived products in anti aging agents. FDA is concerned about the products termed as anti aging /anti wrinkle creams, because they are found to have various side effects, as they contain excessive chemicals which are required to produce an effective result. The aim of the current study was to extract the active constituents, formulate and evaluate the skin cream containing *Syzygium cumini* extract, a plant based cosmetic preparation. The assay of free radical medicated DNA damage inhibition was done to evaluate the skin cream containing *Syzygium cumini*. At the same time prompt screening of the skin cream prepared with plants is much essential. In the present study, the prepared skin cream was evaluated by DNA damage inhibition assay. The formulated cream can be effectively used for inhibiting the aging process of skin and will serve to be a breakthrough in the herbal cosmetic scenario.

Keywords: Anti aging, Skin Cream, *Syzygium cumini,* DNA damage inhibition assay

INTRODUCTION

The pharmacological relevance of the Plant metabolites has been of great interest to man for a long time. The traditional medicines for a variety of diseases were followed by large proportion of world population, especially in the developing countries. The researchers have worked at molecular levels to understand the mechanism of action and isolated several significant phytochemicals. It has been confirmed by WHO, that traditional medicines, based largely on animals, different species of plants and to serve the health needs of large number of people; especially to the vast rural area people who live in millions in developing countries [1]

The *Syzygium cumini* linn. skeels, has been shown to potentially contain many medicinal properties in the folkore sytem of medicine. It is a medium sized to large tree. The bark of the plant is refrigerant, carminative, astringent, sweet, diuretic, digestive, antihelmenthic, constipating, stomachic and antibacterial. The fruits are used to treat diabetes, spleenopathy, ringworm infection. The leaves are used to strengthen the teeth and gums. [2]

A number of chemical constituents from the seeds, fruits, leaves, flowers, roots and bark of the plant have been previously reported and this species is extensively investigated; these include gallic acid, myricetin, flavonol glycoside, acetyl oleanolic acid, tannin, , triterpenoids, saponins, ellagic acid, quercetin, isoquercitin, anthocyanin and kaempferol. [3-7] The pharmacological evaluation of this plant concerning its anti-diabetic, [8-11] hypolipidaemic, antioxidant, anti-HIV, anti-diarrheal, anti-inflammatory, anti-bacterial, antipyretic, radioprotective [12] and neuropsycho-pharmacological activity have been shown [13-17].

Even though it has different ethno medicinal uses, the literature survey showed that only some pharmacological research has been done to show that it has anti aging effect. One such work shows that it is been done on the Eugenia jambolana's stem bark. Hence our aim is to evaluate the anti-aging characteral activity of Eugenia jambolana bark in this present study.[18]

The decrease in the collagen synthesis has been due to the upregulation of the metalloproteinases in the matrix [19]. It results in breakdown of the connective tissues during photo aging.[20] There is about 1% decrease in collagen content per year, during adulthood, since old age people have higher levels of MMP , this rate is higher in the aged people.[21]

The main cause of oxidative stress skin is due to the exposure to Ultra Violet Radiation and hence it is one of the important risk factor for development of skin problems [22] for example, wrinkle formation, lesions and cancer. The skin molecules absorb Ultra Violet Radiation resulting in the generation of reactive oxygen species (ROS) is due to the exposure to sunlight, [23]

MATERIALS AND METHODS

Collection of Plant Material and Extraction:

In the month of December 2015, the *Syzygium cumini* bark was collected from Tiruneveli district of TamilNadu. The extraction process was done by cold maceration technique. The plant material was dried in shade and powdered coarsely. The powdered bark was then divided into two halves of 500 g each and placed into two containers and ethanol (Solvent) was added until it dissolved. The filtrate was then concentrated in a china dish and used for the cream Preparation.

Preparation of skin cream from *invitro* anti aging assay:

The Skin cream was prepared for analyzing the anti aging properties of the extract *Syzygium cumini.* The weight of the constituents in the skin creams is given in the **Table 1**.

Table 1: Constituents of the skin cream

SAMPLE	ADDITIVES/EXTRACTS	FORMULA
Oil phase	White Bees Wax	4g
	Liquid Paraffin	12g
Aqueous Phase	Borax	0.4g
	Water	Quantity Sufficient
	Ethanol Extract	1mg

Method: White bees wax and liquid paraffin which was incorporated with *Syzygium cumini* extract in a china dish at 70^0c borax was dissolved in water. Required quantity is heated in a beaker at 70^0c.

The cream was obtained by adding the aqueous solution into the oily solution and stirred continuously.

Inhibition of DNA damage-In vitro anti-aging property of the skin cream-:

The method of Halliwell and Gutteridge was carried out to find out the potential of the Skin Cream and to prevent DNA damage was carried out by (1981) [24]. The skin cream in varying quantity (0.7, 0.8, 0.9, 1.0, 2.0 & 5.0mg) was added to the reaction mixture containing 0.5 ml phosphate buffer (0.1 M Sodium Chloride), 0.5 ml deoxyribose (1 mg/ml in 0.15 M Nacl), and 0.2 mL ammonium ferrous sulfate (4.8mM)

to make a final volume of 1 ml TBA (1%) and it is continued by the addition of 1 ml TCA (2.8%). The tubes with the reaction mixture were incubated for 20 minutes in the boiling water. The reaction mixture was then extracted with butanol and the absorbance was measured in the spectrophotometer at 456 nm.

RESULTS AND DISCUSSIONS

Free radical medicated DNA damage inhibition of the skin cream assay is given in (table no 2). The DNA damage inhibition offered by the skin cream was found to increase with increase in the concentration and decreases from 2 to 5mg. The DNA damage inhibition offered by the skin cream reached a maximum at 1mg and then decreased gradually afterwards. Increase in percentage DNA damage was noted upto 1mg concentration for cream.

The variation in the pH / concentration of Cream probably might have reduced the percentage of DNA damage inhibition. The percentage inhibition of *Syzygium cumini* extract containing formulation is given in table no 2.

Table 2: Percentage (%) DNA damage inhibition

S.N0	AMOUNT	%INHIBITION
1	0.7mg	21.10%
2	0.8mg	27.70%
3	0.9mg	32.13%
4	1mg	37.80%
5	2mg	20.70%
6	5mg	6.00%

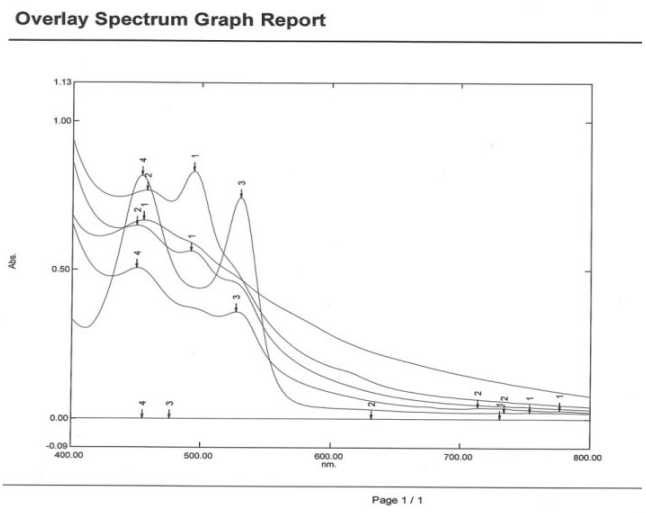

Fig No.:1 Overall UV Spectrum of Various concentrations Of Extract

Table 3: Evaluation of the Prepared Skin Cream

S.NO.	PARAMETERS	OBSERVATIONS
1	Temperature	Room Temperature
2	Formulation	w/o Type Cream

3	pH	8.84
4	Homogenecity	Good
5	Appearance	Dull White
6	Spreadability	Good
7	Type of Smear	Greasy
8	Removability	Removable
9	Viscosity	0.0125 poise

CONCLUSION

For anti-aging cream to be effective, it should possess many pharmaceutical properties and the most important being the anti oxidative property. Even though, several synthetic chemicals that either prevents or controls aging by any one of the many mechanisms are available, recent research focuses on the use of plant derived products as antiaging agents. Prompt screening of the skin cream prepared with plants is much essential. In the present study, the antiaging efficiency of the skin cream prepared with ethanol extract of *Syzygium cumini* was evaluated by DNA damage inhibition assay. Different concentrations of *Syzygium cumini* extract (0.7mg, 0.8mg, 0.9mg,1mg, 2mg and 5mg) was subjected to DNA inhibition assay method. The maximum inhibition of 37% was seen in the 1 mg of *Syzygium cumini* extract containing cream shows maximum inhibition of 37% for in vitro aging activity. The prepared cream as evaluated and the results are satisfactory. It was shown in the table no 3.Henceforth the cream can be preceded for further anti-aging studies.

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