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ANTIOXIDANT ACTIVITIES OF MALTYADI TAIL: AN ANTIDANDRUFF OIL

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ABSTRACT

Introduction:- In present time herbal products with antioxidant activities are being increasingly researched for health and good alternative to chemicals presently used in cosmetics for some purpose. Hair is an important part of one's personality. Due to aging or use of different products, scalp would become dry and unhealthy. *Maltyadi tail* said by *chakradatt* in treatment of *darunak*/ dandruff. Antioxidant protects the scalp cells in the blood vessels to promote the healthy hair growth. **Aim and objectives:-** To evaluate antioxidant activites of *Maltyadi tail*. **Materials and Methods:-** To estimate the value of this oil as an antioxidant by DPPH scavenging activity and total flavonoid and total phenolic methods. **Result:-** *Maltyadi Tail* showed the significant antioxidant activity by the DPPH free radical scavenging method, total phenolic and total flavonoids methods. **Conclusion:-** The study revealed that *Maltyadi tail* showed significant efficacy.

KEYWORDS: Herbal, antioxidant activities, cosmetics, *Maltyadi tail*, DPPH free radical, Total phenolic, Total flavonoids.

INTRODUCTION

Antioxidants have an important role in preventing different diseases and aging because these are related to the active oxygen and lipid per-oxidation.[1] Antioxidants are the compounds, that combat the free radicals by intervening at any one of the three major steps of the free radical mediated oxidative process, viz., initiation, propagation and termination.[2] Antioxidants are very essential in reducing free radical reactions. Pollutants, ionizing radiation or UV light, exposure of biological system to xenobiotics, and development of certain pathological condition leads to oxidative stress, thereby increases production of oxy radicals.[3] Ultraviolet radiation (UVA) activates oxidative reactions by stimulating riboflavin, porphyrins and NADPH-oxidase, with the production of 8-oxo-guanine as the core result and the reduction of intracellular glutathione (GSH) level with a return to normal after cessation of exposure.[4] The antioxidant activity was evaluated by the method DPPH free radical scavenging activity, total phenolic content and total flavonoid content. 2-2 diphenyl -1-picrylhydrazy (DPPH) free radical scavenging method provides a first approach to determine the antioxidant ability of a compound, an extract or other biological sources. *Maltyadi tail* having following ingredients: *Chitrak* (*Plumbago zeylanica* Linn.), *Jaati* (*Jasminum officinale* Linn.), *Karveer (Nerium Odorum* Soland*), Karanj* **(***Pongamia pinnata* (L) Pierre**)** and *tila tail* as base oil. Most of the ingredients (*jaati*,[5] *chitrak*,[6] *karanj*,[7] *tila tail*[8]) of *maltyadi tail* have antioxidant properties. *Jaati* tones dry, greasy, irritated and sensitive skin, increases elasticity and is often used to assist stretch marks and reduce scarring[9] Sesame oil is used after exposure to wind or sun to calm the burns. It nourishes and feeds the scalp to control dry scalp dandruff.

Antioxidant[10,11,12]

Antioxidants are used as such additives to protect human body externally and internally from undesirable oxidative reactions. The antioxidant activities of plants and their formulations have been increasingly investigated in recent decades for the development of new herbal antioxidative agents.[13,14,15]

Aim and objective

This study aimed to evaluate the in vitro study of antioxidant activities of *Maltyadi tail*.

MATERIALS AND METHOD

Evaluation of antioxidant activity:- To estimate the value of this oil as an antioxidant agent, 1,1-diphenyl-2-

picryl-hydrazil (DPPH) free radical scavenging, total phenolic and total flavonoid contents, the corresponding experiments were performed.

DPPH free radical scavenging assay

Test sample: *Maltyadi Tail* at three different concentrations (5%, 10% and 15%) in DMSO.
Base oil: *Tila tail* at 15 % concentration in DMSO.
Standard sample: *Ascorbic Acid (15 %)*

The DPPH free radical scavenging activity of *Maltyadi Tail*, *Tila tail*, Standard Sample (Ascorbic Acid) and Blank solution was measured from bleaching of the purple colour of 2.2 Diphenyl -1-picryl hydrazyl. 0.1 ml solution was added to 1.4 ml of DPPH and kept in dark for 30 min. The absorbance was measured at 517 nm and the percentage inhibition was calculated by using the following Equation.

$$\textbf{Percentage Inhibition (\%)} = \frac{\textbf{(A0 – A1)}}{\textbf{A0}} \times 100$$

where:
A0 is the Absorbance of Blank
A1 Absorbance of *Maltyadi Tail*, *Tila* tail and Ascorbic Acid

Determination of total phenolic content

Test Sample: 1 ml (25 % in DMSO)

1 ml of sample solution was added in 2.5 ml of 10 % folin ciocalteau reagent and 2.5 ml Na_2CO_3 (7.5 %) were added sequentially then, samples were incubated at 45°C for 45min. The tubes containing the above reaction mixture were warmed for 1 minute, and cooled subsequently for measuring at 760 nm.

The concentration of phenol in the test samples were calculated from the calibration plot and Phenolic content was measured using garlic acid equivalent per gram of dried extract (µg GAE/g sample) by means of the garlic acid calibration curve

Determination of flavonoid content

1ml sample and 1 ml standard quercetin solution (50, 100, 150, 200 microgm /ml) and 4 ml of water were added to a volumetric flask. 0.3 ml of 5 % sodium nitrite, 0.3 ml of 10% aluminium chloride was added after 5 min. Then after 6 min incubation at room temperature, 2 ml of 1 M Sodium hydroxide was added to the reaction mixture and immediately made up to 10 ml with distilled water. The absorbance was read at 510 nm and the results were expressed as Quercetin equivalents (mg Quercetin/g dried extract).

Anti-Oxidant study result

a) DPPH free radical scavenging assay

The result DPPH free redical scavenging assay of *Maltyadi tail* in presented in Table No.2.

Table no. 2

S No.	Solution	Absorbance at 517nm	Percentage Inhibition
1	Blank	0.579	-----
2	*Maltyadi Tail* (5 %)	0.454	21.59
3	*Maltyadi Tail* (10 %)	0.411	29.02
4	*Maltyadi Tail* (15 %)	0.355	38.69
5	*Tila tail*	0.498	13.99
6	Ascorbic Acid	0.098	83.07

b) Determination of total Phenolic and Flavonoid content

The result total Phenolic and Flavonoid Content of *Maltyadi tail* in presented in Table No.3.

Table no. 3

S. No.	Sample name	Phenolic Content (mg of gallic acid Equivalent /gm oil)	Flavonoid content (mg of quercetin/ gm oil)
1	*Maltyadi Tail*	14.29	29
2	*Tila Tail*	7.14	13

RESULT

The *Maltyadi tail* is showing good antioxidant activity when compared with its base oil *tila tail*. Our results revealed that the antioxidant capacity of the *maltyadi tail* is comparable to the antioxidant activity of *tila tail*. Although there are various methods are available for measuring antioxidant activity, we used DPPH , total phenolic and flavonoid content method.

DISCUSSION

The maximum antioxidant activity of oil may be because of the presence of *tila tail* which has established antioxidant property. The antioxidative agents of *tila tail* are sesamin, sesamolin, sesamol, their glucosylated forms sesaminol glucosides and tocopherol make the oil very stable and therefore it has a long shelf life.[16] Ingredients present in *maltyadi tail, jaati, chitrak, karanj* also have antioxidant,[17,18] properties.

CONCLUSION

The antioxidant properties of hair oil reduce oxidative stress in scalp and keeps scalp healthy. Oxidative stress is an imbalance between free radicals and oxidants in our body. Dandruff (*malassezia*) is also a source of oxidative

stress. Antioxidant improve scalp condition can enable a reduction in hair shedding and thus an increase in perceived hair fullness. *Maltyadi tail* is said by *chakradatta* in treatment of *darunak*(dandruff) . On the basis of antioxidant activity results it can be concluded that the *maltyadi tail* exhibited good antioxidant activity when compared with *tila tail*.

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