RESEARCH ARTICLE

UV Spectrophotometric Analysis of Apigenin in Topical Fungal Formulation containing Extract of *Leonotis nepetaefolia* (L) R. Br.

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ABSTRACT

Fungal infections continue to endanger human health, and the problem is only becoming worse. Combination therapy may be an optional strategy for the treatment of invasive fungal illnesses, and the potential antifungal mechanisms provide new insights into the development of innovative antifungal medications. Numerous investigations have shown that combining plant extract showed significant antifungal activity. In the present work, a topical fungal formulation containing hydroalcoholic extract of *Leonotis nepetaefolia* (L) R.Br. (TFF) in form of a cream was estimated for apigenin. A technique has been created and validated using UV spectrophotometric analysis in order to evaluate the aforementioned drugs simultaneously in the formulation.

Keywords: Apigenin, Extract, Fungal, Topical formulation.

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INTRODUCTION

There are numerous herbal medications that are frequently used to treat different fungi-related illnesses. Modern synthetic medications don't have a root-cause cure. However, herbal medicine has effective treatments for a variety of fungus problems.[1] *Leonotis nepetaefolia* (L) R.Br. (Barchibuti) is a plant commonly found in wild state. It is an annual herb belonging to the Lamiaceae family. Alkaloids, labdane diterpenes, flavonoids, and iridoid glycosides make up phytochemistry. Every portion of the plant has medical applications. According to claims, the plant can treat gynecological diseases, discomfort, inflammation, and microbial infections in addition to acting as a contraceptive.[2] Analytical method development is essential for the standardization of herbal formulation. There are many different herbal formulations on the market that patients can use, thus it is necessary to define their analytical parameters.[3] The topical fungal formulation in cream was prepared using the hydroalcoholic extract of the selected plant and the apigenin content was estimated using UV spectrophotometric analysis.

MATERIAL AND METHODS

Material

Topical fungal formulation (TFF) in form of cream was prepared using the hydroalcoholic extract of *L. nepetaefolia* (L) R. Br. Flowers.[4,5]

Methods (Estimation of Apigenin)

UV visible spectrophotometer model UV-1900 Shimadzu was used to apigenin in the formulation and hydroalcohlic extract of *L. nepetaefolin*. Accurately weighed (10 mg) apigenin was dissolved in methanol (100 mL) and made from the same different concentrations of 5/50 g/mL. The absorbance was measured at 335 nm. In 1-gm of TFF/extract was weighed and mixed with 6 volumes of denatured spirit. The same was filtered and was concentrated to get semisolid mass. The content was determined as a previously discussed method.

RESULTS AND DISCUSSION

The results obtained (Table 1 and Graph 1) indicate that it follows Beers law. R^2 was found to be 0.996, precision 0.397,

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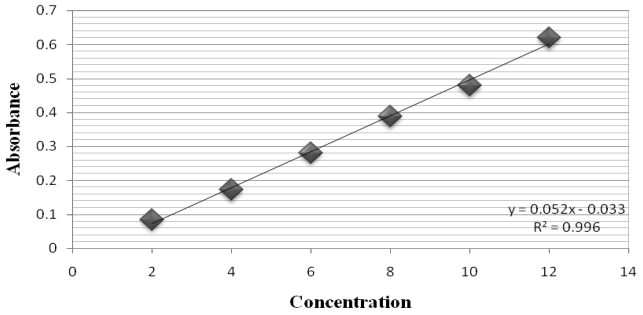
Table 1: Calibration curve of apigenin

S No.	*Concentration*	*Absorbance*
1.	2	0.084
2.	4	0.172
3.	6	0.281
4.	8	0.388
5.	10	0.479
6.	12	0.619



Graph 1: Calibration curve of apigenin

Table 2: %Recovery of apigenin

Apigenin amount µg/mL			*%RSD*	*SE*	*%Recovery*
Amount sample	*Amount added*	*Amount estimated*			
100	50	148.03 ± 0.72	0.483	0.294	99.38 ± 0.82
100	100	201.46 ± 0.19	0.319	0.268	100.03 ± 0.16

Table 3: Estimation of apigenin in hydroalcoholic extract and topical formulation

Sample	*Apigenin content in %w/w*	*Confidence level (95%)*
HAELNF	1.44 ± 0.041	± 0.129
TFF	0.654 ± 0.112	± 0.188

Mean ± SD of six determinations

accuracy 99.61% and LoQ and LoD was found to be 0.360 and 0.127 µg/mL, respectively. Separately, suitable aliquots of apigenin extract from formulated cream TFF and HELNF were extracted in a 10 mL volumetric flask. Absorbance was measured at 335 nm for aliquots of each. The apigenin calibration curve was used to calculate the matching apigenin concentration against the absorbance value. Statistical analysis is also undertaken to ensure batch homogeneity (Tables 2 and 3).

CONCLUSION

UV spectroscopy estimated the TFF along with extract HAELNF for active constituent's apigenin. Results revealed that HAELNF contains 1.44 ± 0.041% w/w and TFF contains 0.654 ± 0.11 2% w/w apigenin.

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