

Evaluation of Licorice efficacy on melasma

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Dear editor,

Treatment of melasma has remained a hot topic in dermatology because of its resistance to therapy and high recurrence rate. For many years hydroquinone was the foundation of melasma treatment, but its use has been limited during these years due to a number of adverse events, such as skin irritation, hyper and hypo pigmentation, nail discoloration, conjunctival melanosis and ochronosis. Furthermore hydroquinone is quite unstable and is quickly oxidized and become inactive. So Hydroquinone is gradually being replaced by new lightning substances, such as kojic acid, phytic acid, azaleic acid, arbutin, mequinol, aleosin, ascorbic acid, soya proteins, N-acetyl glucosamine and licorice¹⁻⁵. In this study we evaluate the effect of a licorice containing product (lightening serum, LANGE Paris) for the treatment of melasma. There are several active ingredients in licorice extract effective on melasma. These are liquiritin, glabridin, licochalcone A and isoliquertin.

Thirty four volunteers with melasma were enrolled in this study. The exclusion criteria were pregnancy, lactation, use of hydroquinone or other lightener drugs in last 6 month, endocrine abnormalities and inability to come for follow up visits.

The lightening serum was initiated twice daily on the face. The results were assessed at weeks 4, 8 and 12 using melasma area and severity index (MASI) score and physician global assessment (PGA) score. Demographic data's are listed in table 1.

Changes in MASI score is shown in table 2. The mean MASI score began to decrease after 4th week and it continued to decrease in all 12 weeks and the differences were statistically significant (p-value<0.0001).

Based on PGA score, in 4th week 17 (50%) patients had no improvement, 8 (23.53%) had slight, 6 (17.65%) had moderate and 3 (8.82%) had significant improvement. In 8th week, one (2.94%) case showed slight improvement, 8 (23.53%) moderate, 16 (47.06%) significant and 9 (26.47%)

Table 1. Patient's demographics

Sex, no, (%)	
Female	33 (97.06%)
Male	1 (2.94%)
Age (year)	
Mean (SD)	40.12 (7.96)
Range	(26-63 years)
Fitzpatrick, no, (%)	
Type I	6 (17.65%)
Type II	24 (70.59%)
Type III	4 (11.76%)
Location, no, (%)	
Cheeks	19 (55.90%)
Forehead	2 (5.90%)
Both	13 (38.20%)
Type of melasma, no, (%)	
Epidermal	12 (35.30%)
Dermal	22 (64.70%)

Table 2. Changes in MASI score during the study.

Visit	MASI score		
	Mean (SD)	Median	Range
Base line visit	17.06 (4.30)	16	5-24
Week 4	19.92 (7.90)	21	3.6-36
Week 8	8.43 (3.95)	8.4	0-14.4
Week 12	2.18 (0.95)	2.4	0-3.6

cases showed very significant improvement. At the end of 12th week, 2 (5.88%) patients had significant improvement, 22 (64.71%) had very significant improvement and 10 (29.41%) patients experienced complete improvement. No case of complication was recorded during twelve weeks.

Glabridin (one of the most important ingredient of licorice extract) inhibits tyrosinase enzyme without any detectable effect on DNA. Liquiritin is the other important ingredient of licorice extract with whitening effect. Glycyrrhizin together with flavonoid and gladribin in licorice extract has anti-inflammatory effects⁵.

The various components in licorice extract each inhibit melanogenesis by different mechanism, some by inhibiting tyrosinase and some independent to tyrosinase¹. So theoretically in equal concentration application of licorice extract must have superior

effect on melasma than each single component. Adding other active elements to licorice extract such as vitamin C and AHA and ascophyllum nodosum can even increase its efficacy¹⁻⁴.

Ascophyllum nodosum is brown seaweed that grows abundantly in the Northeast coastal region. Ascophyllum nodosum can inhibit endothelin-1 (ET-1), a molecule synthesized and released from the keratinocytes after UV exposure. When ET-1 is inhibited, melanin formation is likewise inhibited⁶.

Complications with licorice are negligible and patient satisfaction is very good. So licorice extract may be a safe lightening agent with minimal unwanted effect and due to its anti inflammatory effect, could be used even in sensitive and irritated skin².

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