J. Appl. Cosmetol. 15, 109-114 (July-September 1997)

A NEW PELOID MASK OF ETRUSCAN ORIGIN

G. Fabrizi *, P.Morganti**

*Department of Dermatology, Catholic University of Rome Italy

** Secretary General, International Society of Cosmetic Dermatology
President, Director Research & Development - MAVI SUD S.r.l. Aprilia (LT), Italy
Department of Dermatology, Dermatologists Training School, II University of Naples, Italy

Received: *May 15, 1997.*

Key words: Peloid, Peat Mud, High-moor Peat, Natural Mud, Cellulitis.

Synopsis

Cosmetics can be labelled as "natural" and environmentally friendly if their components are biocompatible and do not cause problems of environmental impact.
We tried to develop a cosmetic product answering to the above requirements.
A natural peloid of Italian origin has been used as sole raw material. This peloid has "sui generis" characteristcs, that allow its classification as an High-moor Peat or a Peat Mud.
This mud can be defined "natural" according to Pisani.
The mud is a completely water-soluble product of sea origin. It settled about 30.000 years ago during the last ice age. It does not contain pollen, nor vegetable traces of its formation. It has a buttery consistency and can be easily spread on the skin and conditioned trough the use of several mineral waters. A double blind test was conducted with 20 female volunteers (aged between 18 and 45 years) with medium degree cellulitis variously located on the anterior-lateral surface of thighs.
Obtained data have shown a statistically important reduction ($p<0.01$) of the hypoderm thickeness at the end of this brief treatment, and have therefore proven the validity of this new natural cosmetic.

Riassunto

Un cosmetico può essere definito "naturale" ed ecologico se la totalità dei suoi componenti è biocompatibile e non causa problemi di impatto ambientale.
Abbiamo cercato di mettere a punto un prodotto rispondente a questi requisiti.
Un peloide naturale di origine italiana è stato utilizzato come esclusiva materia prima.
Il peloide ha delle caratteristiche "sui generis" che permettono la sua classificazione come Torba Alta o Torba Umica.
Questo fango può essere definito "naturale" secondo Pisani.
Il fango è un prodotto completamente solubile in acqua, di origine marina. Si è depositato circa 30.000 anni fa durante l'ultima glaciazione. Non contiene pollini, né tracce vegetali della sua formazione. Ha una consistenza burrosa e può essere spalmato facilmente sulla pelle e condizionato attraverso l'uso di diverse acque minerali.
Un test doppio cieco è stato condotto su 20 donne volontarie (di età compresa tra i 18 e i 45 anni) con una cellulite media presente in modo sparso sulla superficie antero-laterale delle cosce.
I dati ottenuti hanno dimostrato una riduzione statisticamente significativa ($p<0.01$) dello spessore dell'ipoderma alla fine di questo breve trattamento, ed hanno quindi provato la validità di questo nuovo cosmetico naturale.

In our opinion cosmetics can be labelled as "natural" and environmentally friendly if their components are biocompatible and do not cause problems of environmental impact.

We tried to develop a cosmetic product answering to the above requirements.
A natural peloid of Italian origin has been used as sole raw material. This peloid has "sui generis" characteristcs, that allow its classification as an High-moor Peat or a Peat Mud.

This mud can be defined "natural" according to Pisani (1) since thanks to its unique characteristics, it can be used as it is after having undergone a simple industrial process that does not change its essential chemical and physical characteristics.

PEAT MUD CHARACTERISTICS

The mud is a completely water-soluble product of sea origin. It settled about 30.000 years ago during the last ice age. It does not contain pollen, nor vegetable traces of its formation. It has a buttery consistency and can be easily spread on the skin and conditioned trough the use of several mineral waters (Tab I, II).
To better catalogue this Peat Mud the ether-methanol-acetonic extract of the dried mask has been checked in a 40°C stove as per Curri-Agostini method (2,3).
From the respective extracts, sterols have been separated by columns and GC, such as sitosterol, ergosterol, cholesterol, etc. (Tab. III) and fatty acids such as myristic, myristoleic, palaistic, stearic, oleic, linoleic, linolenic, arachidic, behenic and lignoceric (Tab. IV).
Furthermore the presence of a sugar fraction composed by glucose, fructose, rhamnose, allose, xylose and arabinose has been verified(4).

Table I

Chemical and physical characteristics

pH of centrifuged liquid	5,1
Dry residue at 105°	10,36%
Ashes	14,58% on dry residue
Ammonia on centrifuged liquid	traces
Nitrites on centrifuged liquid	traces
Phosphates on centrifuged liquid	absent
Bisulphides on centrifuged liquid	absent
Chloroformic extract	0,59% on dry residue
Organic nitrogen as per Kjedal	1,85% on dry residue
Proteins and aminoaeids (Bradford)	7,35% on dry residue

MATHERIALS AND METHODS

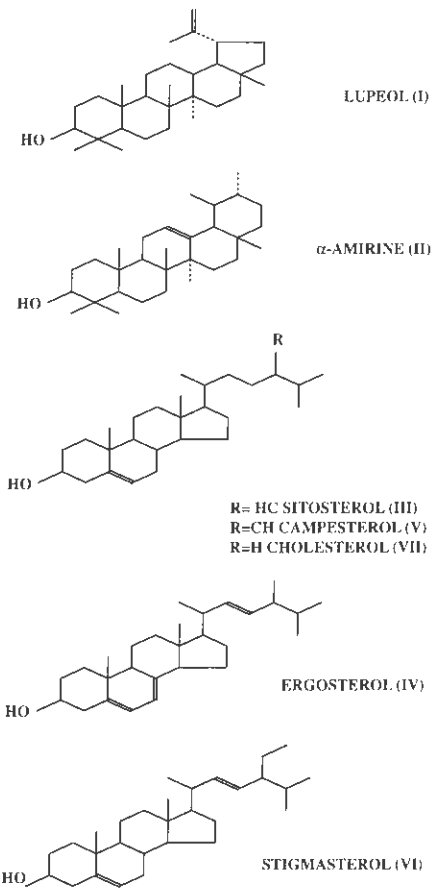
Having been refined by cylinders, the mud has been used for the topical treatment of cutaneous areas affected by cellulitis.

Table II

Chemical and physical characteristics
Peat Mud Ashes' analysis

Na_2O	1,15%	equal to	Na^+	0,85%	(0,37 meq/g)
K_2O	0,24%	equal to	K^+	0,20%	(0,05 meq/g)
CaO	29,10%	equal to	Ca^{++}	20,80%	(10,40 meq/g)
MgO	2,22%	equal to	Mg^{++}	1,34%	(1,10 meq/g)
SrO	0,08%	equal to	Sr^{++}	0,07%	(0,01 meq/g)
Fe_2O_3	5,04%	equal to	Fe^{+++}	3,53%	(1,89 meq/g)
MnO	0,10%	equal to	Mn^{++}	0,08%	(0,03 meq/g)
Ni^{++}	12ppm				
Zn^{++}	39ppm				
Cr^{+3}	2,8ppm				
Pb^{++}	0,2ppm				
Cu^{++}	17,0ppm				
Cd^{++}	traces				
Li^+	traces				
Al^{+3}	traces				
As^{+3}	0,60ppm				
Hg^{++}	0,07ppm				
Se^{+4}	traces				
Cl^-	0,77%				(0,21 meq/g)
SO^3	34,70%	equal to	SO_4^{-2}	41,70%	(8,68 meq/g)
P_2O_5	0,02%	equal to	PO_4^{-3}	0,03%	(0,009 meq/g)
N_2O_5	0,48%	equal to	NO_3^-	0,56%	(0,09 meq/g)
SiO_2	14,00%				

Table III



Sterol's content

SUBJECTS AND DESIGN OF THE STUDY

A double blind test was conducted with 20 female volunteers (aged between 18 and 45 years) with medium degree cellulitis variously located on the anterior-lateral surface of thighs.

The mud was applied in a homogeneous way (about 0.2 cm thick) on the affected area (9 cm^2) of the right or left thigh, while on the other one a black coloured placebo mask was applied (mask B).

The treatment was carried out in an environment of controlled temperature and humidity 20 consecutive days (at 10 a.m. during February 1997) and, in order to eliminate possible external influences, 50% of women were treated on the right thigh with the mask A (active) and the other 50% treated with A on the left thigh. The selected subjects were not taking drugs for systemic administration or anti-cellulitis topic products and, moreover, had not undergone specific diets before and during the clinical trial's period.

Before the beginning of the treatment three points on the surface to be examined in each subject and for both thighs were located. At the level of these points the ultrasonographic measurements were carried out before and after the treatment using the Dermoscan A((Cortex Technology, Denmark) already used by our group in former studies (5).

Through the use of Dermoscan A the tickness

Table IV

Fatty acids content of the Peat Mud

	Systematic name	Trivial name/abbreviation	Shorthand notation
Saturated	eicosanoic	arachidic	(20:0)
	hexadecanoic	palmitic	(16:0)
	octadecanoic	stearic	(18:0)
	tetracosanoic	lignoceric	(24:0)
Unsaturated	9-octadecenoic	oleic	(18:1, n-9)
	9, 12-octadecadienoic	linoleic	(18:2, n-6)
	9,12,15-octadecatrienoic	linolenic	(18:3, n-6)

evaluation of the subcutaneous tissue is made possible.
When a beam of ultrasounds passes through structuraly different portions of a tissue different echos are produced depending on the acoustic characteristics of the examined areas; those echos are recorded by the instrument and visualized on the screen as peaks (A-Scan). By measuring the distance among the peaks it is possible to determine the thickness of the different structural components of the skin and/or the subcutaneous tissue.
The statistically relevant ($p<0.01$) obtained results are shown in Fig. 1.

RESULTS AND COMMENTS

As already proven by other authors the Scan ultrasound technique seems to be the best methodology feasible for exactly measuring the variations of the cellulitic layers during an anti-cellulitis treatment (6,11). Through the use of this methodology we wanted to verify if this particular natural mud was capable of acting on the cutaneous disorder commonly named cellulitis.
Obtained data (Fig. 1) have shown a statistically important reduction ($p<0.01$) of the hypoderm thickenss at the end of this brief treatment, and have therefore proven the validity of this cosmetic treatment.
Supported by these positive results we are continuing our studies in order to study in detail the potential other cosmetic uses that this interesting natural mud seems to have.

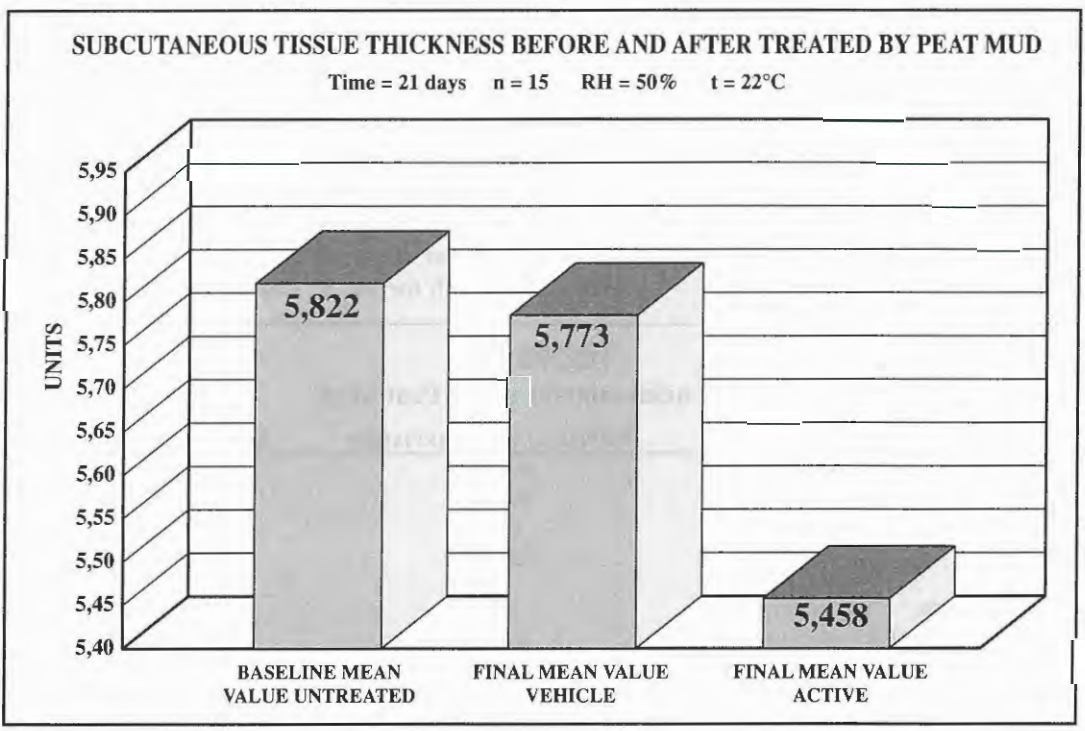


Fig. 1

REFERENCES

1) **Pisani S. (1951)**, I peloidi, in : (M.Messini Ed.) Trattato di idroclimatologia clinica, *Cappelli Ed.*, p. 6
2) **Curri S.B., P.Gonzato (1963)**, Analisi cromatografica su frazioni lipidiche e sterotiche peloidee, *Biochm. Biol. Sper.*, **3** :3, 1963
3) **Agostini G., Fedeli E., Cortesi N., Martinelli M., Curri S.B. (1983)**, Costituenti lipidici di una torba italiana, *La clin. Term.*, **36**: 135:1983
4) **Morelli 1, Piccioli I, Agostini G. (1986)**, Caratteristiche chimico-fisiche di estratti di torba del lago di Massaciuccoli, in : Proceedings VI Giornate mondiali del termalismo, Montecatini luglio 4-7, p. 61
5) **Morganti P, Celleno L, Vasselli A (1995)**, A new trandermal delivery cosmetic system to control the skin localized lipodystrophy, *J. Appl. Cosmetol.* **13,** 15:20
6) **Edwards C. (1988)** Non invasive in vivo measurement of dimensions and properties of stratum corneum and epidermis by A-Scan ultrasound, *15th IFCC International Congress*, **4**, 263-4
7) **Pugliese P.T. (1989)** Use of ultrasound in evaluation of skin care products, *Cosm Toil.* **104** : 61-76
8) **Armengol R., Girones E., Belles A. et al (1992)**, Quantitative evaluation of the anti-cellulitis efficacy by scan-ultrasound and its relation with clinic studies, *17th IFCC Int. Congr*, **Vol. 3**, 1218-1240
9) **Seidenari S. (1995)** Ultrasound B-mode imagine and in-vivo structure analysis, in : Non invasive methods and the skin (Serup and Jemec Ed.), *CRC press Inc., Bocaraton, Florida*, p. 257
10) **Fornage B.D. and Anderson M.D. (1995)** Ultrasound examination of the skin and subcutaneous tissues at 7.5 to 10 MHz, in : Non-invasive methods and the skin (Serup and Jemec Ed.), *CRC press Inc., Bocaraton, Florida*, p. 259
11) **Agner T. (1995)**, Ultrasound A-mode measurement of skin thickness, in : Non-invasive methods and the skin (Serup and Jemec Ed.), *CRC press Inc., Bocaraton, Florida*, p. 289

Correspondence to:
P. Morganti, Ph.D.
Research and Development
MAVI sud srl - Via dell'Industria 1,
04011 Aprilia (LT), ITALY
Phone: + 39 06 9286261
Fax: + 39 06 9281523
E-mail=mavi@colosseum.it
URL=http://www.colosseum.it/st81/mavi