

SKIN HYDRATION AND LIPID CASUAL LEVEL: A QUANTITATIVE MONITORING IN ITALY

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Synopsis

The plasticity of the horny layer, and thus of the skin itself depends on a minimum content of 10% water. In addition, the surface lipids and sebum (Casual Level) are known to play a major role in controlling the skin's water balance. Both hydration and skin lipids, however, differ between different skin areas in respect of their pharmacology and their modifications arising from environmental causes. This work was designed to compile basic data on skin hydration and surface lipid for a broad population. The subjects were 3673 people of different ages and from different climatic areas. For monitoring the data the new 3C SYSTEM computerized equipment was used for its rapidity of use.

Riassunto

La plasticità dello stato corneo e della stessa pelle dipendono dalla presenza di un minimo contenuto di acqua di circa il 10% . Inoltre giocano un ruolo fondamentale sia la presenza del film lipidico di superficie che i lipidi intercellulari, che regolano il bilancio idrico cutaneo. Infine sia l'idratazione che i lipidi cutanei variano nelle diverse aree cutanee e la loro presenza è condizionata dall'umidità relativa dell'ambiente e dall'assunzione di farmaci.

Con questo studio si è voluto effettuare un primo controllo dell'idratazione e del mantello lipidico cutaneo di superficie di un panel significativo della popolazione femminile italiana. Infatti sono state effettuate misurazioni su 3673 persone rappresentanti diverse fasce di età e provenienti da differenti zone climatiche. Le misurazioni sono state eseguite con un nuovo apparecchio computerizzato, il 3C System ® che permette rilevazioni molto rapide e precise.

The plasticity of the horny layer and thus of the skin is known to depend on a minimum amount of water at cell level (1-3).

This water amount plays a major role in maintaining the balance of the skin ecosystem, and is controlled by both the surface lipid film and relative humidity in the outside environment (4-6). As a matter of fact, skin hydration varies considerably with the change of seasons and is highly affected also by the environment (7).

It increases in the summer, when relative humidity is very high, and decreases in the winter.

Changes in skin hydration are tightly linked to the relative humidity in the environment. As a result, they are highly affected by the climatic characteristics of specific areas. Since the Italian territory stretches over about 2,000 km, including European mountainous continental areas, as well as plains which are quite near to the African continent and surrounded by the sea, surface sebum and skin hydration were measured in a large group of women aged 10 to 60 years.

MATERIALS AND METHODS

Materials (by groups)

A study group including 3,673 female volunteers was divided into 5 sub-groups, as follows:

- 1) < 16 ys
- 2) 16 to 25 ys
- 3) 26 to 35 ys
- 4) 36 to 45 ys
- 5) 46 to 60 ys

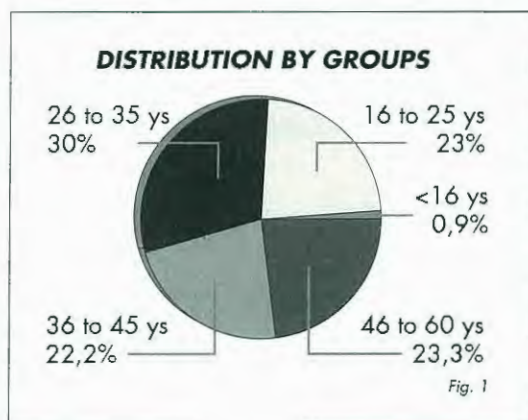
Sub-groups accounted for the following share of total subjects:

- 1) 0.9 %
- 2) 23 %
- 3) 30 %
- 4) 22.2 %
- 5) 23.3 %

As shown also in Fig.1, group 1 was not highly representative due to the difficulty in recruiting volunteers under 15. Group 3 was the largest one (30%); while the remaining groups accounted for almost the same share (22% to 23% approx.).

Depending on climatic areas, the study group was distributed as follows:

NORTHERN ITALY:	1,180	32,2%
CENTRAL ITALY:	1,151	31,3%
SOUTHERN ITALY:	1,342	36,5%



Methods

RESULTS AND NOTES

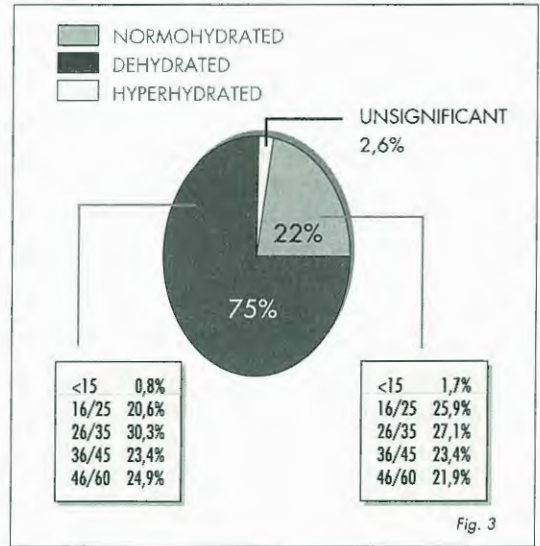
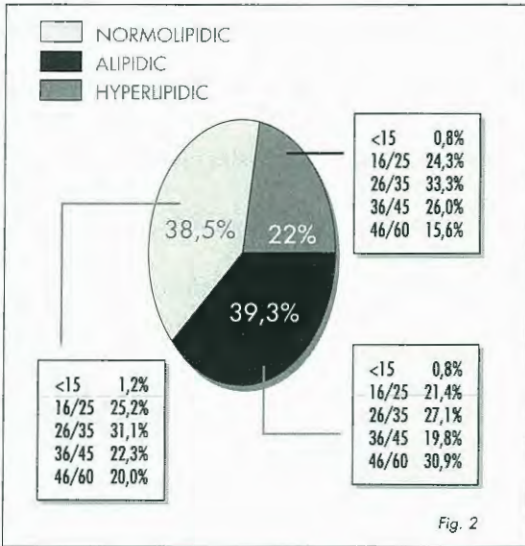
As regards the whole study group, that is at national level, the results for surface lipids were as follows (Fig.2):

38.5 %	normolipidic
39.3 %	alipidic
22 %	hyperlipidic

The results for skin hydration were as follows (Fig.3):

22 %	normohydrated
75 %	dehydrated
2.6 %	hyperhydrated

According to climatic areas, results were as follows:

**NORTHERN ITALY:**

37% normolipidic 18 % normohydrated
 48% alipidic 80.9 % dehydrated
 15% hyperlipidic 1.1 % hyperhydrated

CENTRAL ITALY:

36% normolipidic 21.5 % normohydrated
 45% alipidic 77 % dehydrated
 19% hyperlipidic 1.5 % hyperhydrated

SOUTHERN ITALY:

43% normolipidic 24 % normohydrated
 27% alipidic 73 % dehydrated
 30% hyperlipidic 3 % hyperhydrated

First of all, data shows that, on average, skin surface lipids in the population of SOUTHERN ITALY are 16% higher than in NORTHERN ITALY, while its hydration rate is about 33% higher if considering the rates for normolipidic and normohydrated skin.

This result is far more interesting if taking into account that volunteers from Sicily, which is an island and, as such, is surrounded by the sea, accounted for 50% of the data for the SOUTHERN ITALY group.

This suggest that the environment of seaside

areas, which are probably less polluted and surely more ventilated, helps maintain the surface lipid film and skin hydration.

As regards northern areas, with a higher industrialization rate and larger urban centres, their increased environmental pollution seems to cause a gradual reduction in the surface lipid film and, as a result, skin dehydration.

This first experimental data confirms the well-known large impact of the environment on skin conditions. The high pollution level in big cities, due to both factories and the overcrowding of cars, clearly affects also the skin. Since no such survey has been so far carried out in Italy, it would be necessary to monitor population groups of proper size in order to compare skin values in large and small urban centres, both in seaside and mountain areas, and to determine environmental influences on the skin bioecologic balance.

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