

Sweat control in male by the use of alunogen and cypripedium pubescens

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ABSTRACT

Aim of my study is to investigate upon the quality and quantity of the free fatty acids secreted by apocrine glands, as chief index to determine the real efficacy of a new model of antiperspirant-deodorant, that interferes directly with apocrine glands (by reducing drastically the secretion of free fatty acids) and indirectly with eccrine glands, by minimising the salted water secretion.

I created an innovative cosmetic formula that comprises the Alunogen, idest the heptadecahydrated form of aluminium sulphate, since the generic aluminium sulphate has been recently accused of the onset of the Alzheimer's disease, when penetrating the epidermis, although definitive scientific proof is difficult to establish due to the lack of longitudinal studies, and therefore could be banished in the very next future.

The formula comprises also the concrète of Cypripedium Pubescens (Lady's slipper) which contains, inter alia, the cypripedin, a quinine-analog, endowed by anticholinergic activities, that can be reputed useful as astringent agent with regards to eccrine glands, synergically to the action upon apocrine glands performed by alunogen.

I recruited 11 young men, 11 bricklayers that customarily have to work 9 hours pro day after the hot summer sun and assert without doubt to sweat copiously, in order to carry out my experience.

Key words: Alunogen; Cypripedium pubescens Aluminium; apocrine glands; valeric acid

INTRODUCTION

It is impossible to trace statistical data to clarify the phenomenon of human sweating: sex, race, age and psychological conditions represent a valuable variance in order to draw a precise profile.

It is well known that eccrine glands are deputed to secrete water and salts, principally sodium chloride and undergo the influence of adrenaline and similar molecules like scopolamine, elemicine, myristicine, the concrète of magnolia and all types of amphetamines and other natural or synthetic substances and therefore may be stimulated by anxiety, stress, fear, sexual appeal, and pain [1] and can be abstricted by the use of anticholinergics, meanwhile apocrine glands (large coil glands, retrievable only in certain districts of the body: axillae, nipples of the breast, ear canals, eyelids, wings of the nostril, perianal region and external genitalia [2]

are responsible of the secretion of cholesterol (8.9 mg/cm²) and its salts (8.8 mg/cm²), waxes (21.2 mg/cm²), squalene (13.4 mg/cm²) and glycerides and free fatty acids and their esters (47.4 mg/cm²).

My attention is focused on the quality and quantity of free fatty acids secreted by apocrine glands, as chief index to determine the real efficacy of a new model of antiperspirant-deodorant, that interferes directly with apocrine glands (by reducing drastically the secretion of free fatty acids) and indirectly with eccrine glands, by minimising the salted water secretion.

Solovskaia, et al [3] referred that suggestive changes in the fatty acid composition of sweat lipid do occur in persons whose activity is associated with military service.

It must be stressed that when chemiosensorial tests are carried out to investigate upon the pheromonal

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equipment of sweat in man or in woman, it is advisable that volunteers did not have sexual intercourses before undergoing the aforesaid tests, did not eat garlic or onion or cardamom or ginger or other spices, or drink alcohol or take drugs or smoke tobacco, since quantity and quality of free fatty acids may vary appreciably, during the activity of sweating.

Therefore, sweat represents a peculiar fingerprint of every person and so the main task of an antiperspirant is to reduce the percentage of the free fatty acids the same person secretes, without interfering with the quality that shall be always the same, provided that this person did not behave as I have already explained before.

Since time immemorial manifold salts of aluminium, zirconium, iron, zinc, chrome, hydragyrum and lead have been used as abstrictive agents with regards to human secretory glands, notwithstanding an avalanche of salts of rare metals can make up for the similar functions, like certain salts of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Terbium, Holmium and Thulium [4].

Dermal-cosmetically speaking it is fully inconceivable the proposal of employ of these odd salts, but this stands for explaining that astringency of the apocrine glands can be evoked by a myriad of inorganic and organic substances.

The use of Pure Aluminium sulphate (that nowadays is obtained by the simple neutralization of sulphuric acid by aluminium hydroxide) has been recently indicted since traces of aluminium have been retrieved in the brain of Alzheimer's sufferers, which asserted they have been using antiperspirants based on rock alum for long time, albeit definitive scientific proof is difficult to establish due to the lack of longitudinal studies, as well as pushback from industries that use aluminium in their products [5-9].

Even if this is not the appropriate seat to speak about this concern, Aluminium is a neurotoxic metal and exposure to the metal, when dissolved in drinkable water or inhaled as dust, may be a factor in the aetiology of various neurodegenerative diseases such as Alzheimer's disease.

Objectively Aluminium is a risk in certain working environments, such as mines, where it can be found in water, people that work in factories where aluminium is

applied during production processes may endure lung problems when they breathe in aluminium dust and can cause problems for kidney patients when it enters the body during kidney dialyses.

Occupational asthma has also been a problem in the pot rooms of aluminium smelters [10].

Anyway Nature provides other types of aluminium sulphates, e.g. alunogen, that is the heptadecahydrated form, that is paragenetic with gypsum, and may be found on the world market extremely easy.

Alunogen is completely natural, veins and lodes can be found in Cote du Rhone, Antofagasta (Chile), New Mexico, Pozzuoli and Isola d'Elba in Italy and is widely used and welcome in tanning of leather to prepare the hide, as a mordant for dyes, for clarifying turbid liquids, including post-storm treatment of lakes to precipitate contaminants, as a fire retardant in textile products as a hardener for photographic emulsions for films.

Moreover, *Cypripedium pubescens* (also known as Lady's slipper), the other ingredient I have inserted in my formulation, possesses a number of distinct therapeutic properties like soothing the nerves, such as headache, irritability, hallucination, hysteria, neuralgia, insomnia and even epilepsy, owing to its high percentage of valeric acid, that made it an excellent alternative for valerian, and is considered one of the most appreciated oneirogens by psychonauts [11,12].

It contains even cypripedin, a quinine-analog, endowed by anticholinergic activities, that can be reputed useful as astringent agent with regards to eccrine glands, synergically to the action upon apocrine glands performed by alunogen, even I did not insert this ingredient in the formula for this precise purpose, but for the presence of valeric acid, that could be supposed to show a feed-back action towards the valeric acid secreted by the apocrine glands, as it will be evident from the final results.

I have used for my study the concrete of *Cypripedium Pubescens* and the glycolic extract of the rootstock.

Among the manifold free fatty acids of sweat secreted by apocrine glands (which are manifold), I have selected, as principal indexes for my researches, the following ones:

- Acid n-pentanoic
- Acid n-hexanoic
- Acid n-heptanoic

Acid iso-pentanoic
Acid n-octanoic
Acid 7-octenoic
Acid n-nonenoic
Acid n-decanoic
Acid n-undecanoic.

MATERIALS AND METHODS

We have selected 11 bricklayers that customarily have to work 9 hours pro day after the hot summer sun and assert without doubt to sweat copiously.

We prayed them to abide by some rules I dictated, in order not to alter results of investigations, and so they decided, in order to accomplish the target I promised to them, to cease to drink dark beer, eat garlic and spices for all the duration of the studies.

It is obvious that the individual that behaves routinely (the same diet, the same habit of drinking and smoking or having sex intercourses) does not need to abide by this rule, since the quality of sweat must be reputed always the same, but not the quantity, whenever an antiperspirant is applied under his armpits and on his breast, during his habitual work effort.

They use to work from 8 a.m. till 5 p.m., so the first measurement of all the percentages of free acids secreted by their armpits has been carried out the day number 0.

At 5 p.m. of the day number 0, after their day's work, I prayed each volunteer to keep a 5X5 cm cotton pad soaked by isopropyl alcohol for 30 seconds underneath the right axilla, in order to record their habitual secretion of sweat free acids.

The pads were suddenly inserted in sealed phials and the phials numbered progressively, in order to have the following list:

Day 0 : A,B,C,D,E,F,G,H,I,L,M

At day number 1, at 7.30 a.m. all the volunteers were prayed to spray underneath their armpits my formulation and at 5 p.m., I repeated the same operation of day number 0 and inserted the relative pads in the appropriate phials, numbering those as follows:

Day 1: A,B,C,D,E,F,G,H,I,L,M

At day number 2, at 7.30 a.m. all the volunteers were prayed to spray underneath their armpits my formulation and at 5 p.m. of day number 2 and at 5 p.m. of day number 3, I repeated the same operation of day number 0 and inserted the relative pads in the appropriate phials, numbering those as follows:

Day 2: A,B,C,D,E,F,G,H,I,L,M

Day 3: A,B,C,D,E,F,G,H,I,L,M

At day number 4, at 7.30 a.m. all the volunteers were prayed to spray underneath their armpits my formulation and at 5 p.m. of day number 4 and at 5 p.m. of day number 5 and at the same hour of day number 6, I repeated the same operation of day number 0 and inserted the relative pads in the appropriate phials, numbering those as follows:

Day 4: A,B,C,D,E,F,G,H,I,L,M

Day 5: A,B,C,D,E,F,G,H,I,L,M

Day 6: A,B,C,D,E,F,G,H,I,L,M

Each afternoon I have the results scored by means of a Perkin Elmer 200 Series HPLC system and I plotted these, according to three series:

Series I: Protection 24 hours

Series II : Protection 48 hours

Series III : Protection 72 hours (longue durée).

Here follows (Tab. I) where the initial scores for free acids secreted by the apocrine glands of the volunteers are recorded.

RESULTS AND DISCUSSIONS

The three following tables record the percentage of the real decreasing (measured by HPLC) of the single free fatty acids, secreted during sweating due to hard work under the summer sun, after 24, 48 and 72 hours (Tables 1-3).

It is suggestive to remark that generally the valeric acid (n-heptanoic) decreases very significantly both after 24 hours and 48 hours, even though no valuable result is to be highlighted, for this acid, as far as the scores recorded after 72 hours are concerned, where the percentages of collapse of free fatty acids secretion is extremely scarce.

This is not the adequate seat to express the hypothesis of an odd feed back effect onto the glands with regards to the secretion of the same valeric acid,

Table 1: Scores of the initial quantities of free fatty acids (mg/5 cm² of skin) (day number 0)

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	5.2	7.4	14.1	2.0	4.1	3.6	4.4	9.1	8.2
B	4.1	8.3	11.2	5.9	3.2	4.3	6.1	5.3	9.7
C	6.2	6.6	13.1	3.8	5.3	2.4	7.1	6.7	9.1
D	2.2	9.3	14.0	5.1	3.8	6.6	3.2	7.1	8.7
E	4.3	7.1	12.8	3.3	5.1	6.2	4.3	8.6	6.4
F	3.4	9.2	11.0	5.5	4.2	3.3	2.7	10.1	9.2
G	2.8	7.6	16.3	4.4	4.1	6.2	3.3	5.7	10.0
H	6.1	6.6	13.5	3.2	3.4	4.8	5.7	7.9	11.1
I	5.4	5.1	16.3	2.1	3.2	4.1	6.6	7.4	8.7
L	4.6	7.1	12.2	4.5	4.3	5.1	5.2	3.6	11.9
M	6.2	5.1	14.0	2.0	6.1	1.7	8.2	4.3	11.5

Table 2: Scores of the quantities of free fatty acid (mg/5cm² of skin) at day number 1

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	3.3	5.2	8.0	2.0	3.1	2.9	3.5	7.3	5.6
B	2.4	7.7	6.1	4.4	2.4	4.1	4.3	2.5	6.7
C	1.2	5.5	5.7	4.4	4.1	1.9	6.3	4.6	6.8
D	2.1	4.3	5.2	3.8	2.7	1.8	2.2	5.4	6.2
E	3.2	6.7	4.8	1.1	3.2	4.4	2.6	5.6	3.4
F	2.5	7.4	6.9	3.1	2.8	1.1	1.9	8.2	6.5
G	1.1	5.4	10.4	2.7	3.1	4.7	2.5	4.4	8.6
H	3.5	4.2	5.9	1.5	2.7	2.7	3.1	5.6	8.4
I	4.1	3.6	8.0	4.6	1.1	3.2	4.1	5.8	6.4
L	3.1	6.6	5.2	2.9	0.9	2.7	3.8	4.6	10.1
M	5.1	3.7	6.4	2.4	2.9	1.8	5.6	2.9	8.9

Table 3: Scores of the quantities of free fatty acid (mg/5cm² of skin) at day number 3

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	4.4	6.5	11.1	1.4	3.3	2.7	2.9	7.8	6.6
B	3.8	7.2	9.6	3.9	2.5	2.7	4.9	4.7	6.8
C	5.4	4.6	7.9	2.8	4.1	1.9	6.1	5.3	7.2
D	1.8	7.7	6.9	4.1	2.8	4.9	2.4	5.8	6.6
E	3.1	5.8	10.0	2.9	4.5	5.0	3.3	6.2	7.1
F	2.8	7.7	8.9	2.5	3.4	2.8	1.9	8.4	7.4
G	1.7	6.3	13.3	3.7	3.7	5.2	2.9	4.4	8.5
H	5.3	5.3	10.1	2.6	2.7	3.9	2.7	6.6	10.1
I	4.4	4.7	10.0	1.1	2.4	3.8	4.9	6.1	7.2
L	3.9	4.2	9.8	3.6	3.7	4.1	4.5	2.9	9.8
M	4.8	2.6	8.1	1.7	5.2	0.9	7.3	2.5	10.3

that is contained in the Lady's slipper, even if it is advisable.

The volunteer F is a young red haired man and it is indicative to notice that after 48 hours the collapse of the free acids secreted by the apocrine glands is extremely feeble.

Meanwhile the volunteer E is a blond and blue eyed young man, for, the fact that the collapse of the valeric acid is less evident, could be imputed to his own phenotype.

The following tables are explanatory and descriptive, so that a statistical method to determine final data

(e.g.: the Cramer-von-Mises's method) can result supervacaneous (Tables 4-7).

CONCLUSIONS

It can be confirmed the drastic efficacy of the cosmetic mix Alunogen-Lady's slipper must be reputed eminent when employed in antiperspirant-deodorant items destined to the protection 24 hours, and significative when used in cosmetic items intended to cover a protection of 48 hours.

It is quite insufficient for the "longue durée" protection.

Table 4: Scores of the quantities of free fatty acid (mg/5cm² of skin) at day number 6

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	4.9	6.8	13.1	2.0	3.9	3.3	3.6	8.8	7.9
B	3.9	7.7	10.8	4.8	2.9	3.8	5.7	4.8	8.8
C	5.9	5.8	12.1	2.7	4.7	1.9	6.6	5.8	8.2
D	1.9	8.7	12.6	4.8	3.0	6.1	2.7	6.5	7.7
E	3.8	6.8	11.0	4.8	4.7	5.9	3.7	7.1	6.0
F	2.9	6.6	10.7	4.8	4.2	2.8	1.6	9.1	8.0
G	2.0	6.8	14.9	3.1	3.2	5.3	2.9	4.8	8.9
H	5.5	5.9	12.6	2.4	2.9	3.7	2.6	4.1	9.1
I	4.9	4.7	15.4	2.0	2.2	3.7	5.1	6.3	7.5
L	3.9	6.6	11.4	3.3	3.6	4.9	4.7	2.8	10.0
M	5.5	4.7	13.1	1.7	5.8	1.1	7.2	3.8	10.1

Table 5: Percentages of the collapse of the fatty acids from apocrine glands sweat after 24 hours (day number ONE)

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	37	29.8	43.3	100	24.4	19.5	20.5	19.8	31.8
B	41.3	7.3	43.3	25.5	25	4.7	29.6	52.9	31
C	80.66	16.7	56.5	88.5	59	20.9	11.3	31.5	25.5
D	4.6	53.8	60.3	100	29	72.8	69.1	19.5	28.8
E	25.6	5.64	96.2	96.6	37.3	29.1	39.6	35	46.9
F	46.5	19.6	37.3	43.7	33.4	96.7	29.7	18.9	29.4
G	60.8	29	36.2	39	8.9	24.2	24.3	22.9	14
H	42.7	36.4	56.3	53.2	20.6	43.8	45.7	29.2	24.4
I	24.1	29.5	51	78.1	65.7	22	37.9	21.3	26.5
L	32.7	49.3	57.3	35.6	79.1	47.1	27	87.9	15.2
M	17.8	27.3	47.55	88	52.5	89.5	31.8	32.6	26.7

Table 6: Percentages of the collapse of the fatty acids from apocrine glands sweat after 24 hours (day number THREE)

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	15.4	12.2	21.28	30	9.96	25	34.1	14.3	19.6
B	7.32	13.3	14.29	33.9	21.9	37.3	19.7	11.5	29.9
C	13	30.4	39.7	26.4	22.7	20.9	14.11	20.9	20.5
D	18.2	17.3	47.4	19.7	26.4	25.8	25	12.8	24.2
E	28	18.4	21.9	12.2	11.8	19.4	23.3	28	89
F	17.7	16.4	19.1	43.2	17.1	15.2	29.7	16.9	19.6
G	39.3	17.2	18.5	16	9.8	16.2	12.2	22.9	15
H	13.2	19.7	25.2	19	20.6	18.8	52.7	16.5	91
I	18.6	7.9	38.7	47.7	25	7.4	25.8	17.6	17.3
L	15.3	40.9	19.7	20	14	19.7	13.5	19.5	17.7
M	22.9	49.1	42.2	15	14.8	47.1	11	41.9	10.5

Table 7: Percentages of the collapse of the fatty acids from apocrine glands sweat after 24 hours (day number SIX)

	n-pentanoic	n-hexanoic	n-heptanoic	n-octanoic	n-nonenoic	Iso-heptanoic	n-decanoic	n-undecanoic	7-octenoic
A	5.8	8.2	7.2	nihil	4.9	8.4	18.2	3.3	3.7
B	4.9	7.3	3.6	18.5	9.4	11.7	6.6	9.5	9.3
C	4.9	12.2	7.7	29	11.4	20.9	7.5	13.5	9.9
D	13.7	6.5	10	5.9	7.9	4.9	14	17.5	6.3
E	11.7	4.3	14.1	5.9	7.9	4.9	14	17.5	6.3
F	14.8	28.7	3.7	12.8	nihil	15.2	40.8	9.1	6.3
G	28.4	10.6	8.6	29.6	22	14.6	12.2	39.3	11
H	9.9	10.7	6.7	25	9.4	23	54.4	48.2	18.1
I	9.3	7.9	5.6	4.8	31.3	9.8	22.8	14.9	13.8
L	15.3	7.1	6.6	26.7	16.3	4	9.7	22.3	16
M	11.3	7.9	6.5	15	5	35.3	13	11.7	12.2

CONSENT

The examination of the patient was conducted

according to the Declaration of Helsinki principles. Written informed consent was obtained from the patient for publication of this article.

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