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EFFECTS OF RENDERED SUPERFICIAL AHA'S PEELINGS WITH PATIENTS WITH ACNE COMEDONICA ET PAPULOSA

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Summary. *Acne vulgaris is an ailment of pilosebaceous follicle which is multifarious by nature. It represents the most frequent chronic sickness with teenagers. The apparation of acnes can be shortly characterized on several levels: reinforced secretion of sebum, bacterial proliferation, local inflammation and hyperceratosis. According to some research, about 80% of young people between 12 and 24 years encounter that sickness. Regarding the diversity of possible causes which lead to the pathogenesis of acne, there are several approaches in treatment of this ailment. Beside the classical treatments, due to considerable results, there has recently been given big attention to treating acne by using preparations based on alfa hydroxill acids (AHA). In addition, there is a big importance of adequate care during the therapy in terms of hydration and anti-inflammatory and epithelisant substance.*
The aims of this research were to establish the efficiency of peelings with AHA, to evaluate various concentrations of acids (20%, 40%, 70%), to establish adequate therapeutic concentrations, to test undesirable effects of this therapy and establish the importance of care on everyday basis. The examination was effected in the Centre for Esthetic Medicine-The Health Centre in Niš.
The selection of 60 examinees was divided into 4 sub-groups (patients with acne comedonica et papulosa). Testing areas were 5x5 cm, left and right cheek paralelly.
The therapy was effected once a week and lasted 8 weeks, when analysis, clinical examination and marks inserting in the protocol of research were made. All examinees went through the complete treatment.
The best therapeutical effects with minimum undesirable apparition were obtained by using AHA acids 40%.

Key words: *Alpha hydroxil acids, acne comedonica et papulosa, superficial chemical peeling*

Introduction

Acne vulgaris is an ailment of pilosebaceous follicle which is multifarious by nature It represents the most frequent chronic sickness with teenagers. (1) The apparation of acnes can be shortly characterized on several levels: reinforced secretion of sebum, bacterial proliferation, local inflammation and hyperceratosis. (2) The origination of acnes is connected to the origination of blackbead which closes output canals of sebaceous glands, to reinforced excretion of sebum (1). According to some research, about 80% of young people between 12 and 24 years encounter that sickness. Regarding the diversity of possible causes which lead to the pathogenesis of acne, there are several approaches in treatment of this ailment.

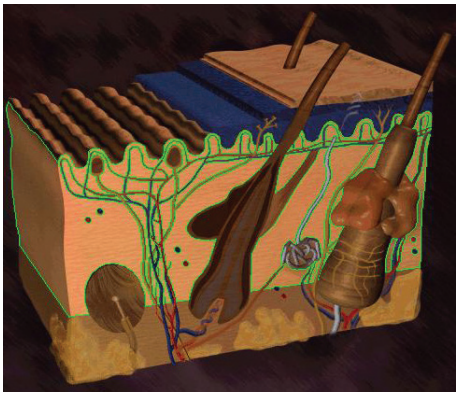
If every recent decade had its own discovery in shape of one or a group of cosmetic products, the 90's of the last century would be remembered as ″AHA's decade″ (3) AHA are organic carbolic acids with hydroxil group on alpha carbon's atom, i.e. the first C atom next to the carboxy group. Due to the presence of polar functional groups, these acids have hydrophilic character (4). In AHA appertain malic, citric, vinous, lactic and glycolic acid (produced from sugar can) (3). Thereafter, it was discovered and concluded that AHA acids are useful in various cosmetic and dermatological problems which include: dry skin, dandruff, callus, acne, ceratose, dugs, ichtiosis and crinkles (5, 6).

Many AHA are naturally curative, present in human body and can be categorized as non-toxic (6, 7). Some alpha hydroxil acids enter in composition of natural wetting factors (8).

AHA's discovery basically refer to Dr Eugene Van Scott, professor of dermatology at University of Philadelphia. Earlier studies were concentrated on dry skin, but Dr Van Scott, during the treatments on different types of AHA, discovered AHA's better effects on acnes and dimples with older population (9).

AHA in lower concentrations (5-10%) reduces largeness of hyperceratotic corneous stratum, by abatement of corneocit's cohesion in its lower parts, hystologically in the zone of connection with stratum granulosum (6, 10), (Picture 1).

Higher concentrations (20-70%) lead to epidermolisys. Regeneration of cells in lower layers is augmented by AHA concentration increase, as by abatement of the product's pH value.



Picture 1, 3D section through the skin (11).

Influenced by AHA, abatement connections occur between cells which are pathologically adherented, and hereby is their separation simplified. As a consequence of this process, the thick stratum corneum becomes thinner.

These changes do not exert immediatelly, but after 2-3 weeks and at that moment are very distinct.

It is important that AHA exhibit this effect during forming of stratum corneum. Exhibited effects on the dermal level are reflected as the dermis volume increase, based on augmented sedimentation of collagen and glycosaminoglican (GAG) in it (6, 7).

In a short period of time, AHA reached large rating, primarily in USA, and later in Europe and Asia. The available data from FDA, point to the application of glicolacids in various cosmetic products, which was doubled from 1994 to 1995, and has a continuous rising trend.

Beside classical proceedings, treating skin with acnes by AHA has recently attracted big attention. Above professional treatments, a regular usage in everyday home care reaches results which sufficiently affirm their therapeutical values (2, 10, 12).

Aims of research

The aims of this research were to:

- establish efficiency of peelings with AHA,
- evaluate various concentrations of acids (20%, 40%, 70%) and establish the adequate therapeutic concentrations,
- test undesirable effects of this therapy and
- establish the importance of regular care.

Materials and methods

The examination was effected in the Centre for Esthetic Medicine- The Health Centre in Niš.

A selection of 60 examinees was based on clinical analyzing and anamnestic data (patients with acne comedonica et papulosa). Differences in sex have not been taken in regard, because influence of hormones has not been followed. The sample consisted of 60 examinees who were divided in four sub-groups (each sub-group had 15 examinees).

Within first three sub-groups all examinees used Dr Murad fruit acids in the following way: the examinees of the first sub-group during the research used fruit acids (20%), the examinees of the second sub-group used fruit acids (40%) and the examinees of the third sub-group fruit acids (70%).

Testing areas were 5x5 cm, left and right cheek paralelly.

In everyday care, a neutral hydrant cream for daily use (with UV protection) manufactured in Apotekarska ustanova in Niš and Plantoderm unguent (Actavis Co.) for nightly use (because of its epithelizing effect) were introduced

The therapy lasted 8 weeks, with treatment once a week when analysis, clinical examination and marks inserting in the protocol of research were made. All examinees went through the complete treatment as it was required by protocol.

With all the examinees of the fourth sub-group (15 examinees) a manual comedo-expression (according to the needs of repetition on two to three weeks) was made at first. They also used every day care which included hydrant cream for daily usage and Plantoderm unguent for nightly usage.

Symptoms which included a number of comedones, papules and greasy face look were followed, evaluated by marks from 0 to 3 (none, weak, moderate, severe), finally scored and graphically presented.

Identical procedures were adjusted in scoring of undesirable effects.

Results of research

Table 1. The results of application 20% fruit acids - evaluation of symptoms score and score of undesirable effects with the first sub-group

Variables/ Number	1. week	2. week	3. week	4. week	5. week	6. week	7. week	8. week
Comedon	45	44	43	39	33	30	25	21
Papula	44	40	38	33	28	27	23	22
Greasy face look	42	42	39	33	28	27	24	20
Erythema	18	14	10	7	2	0	0	0
Desquamation	14	12	9	3	0	0	0	0
Sens. of pulling	15	12	7	4	3	2	0	0

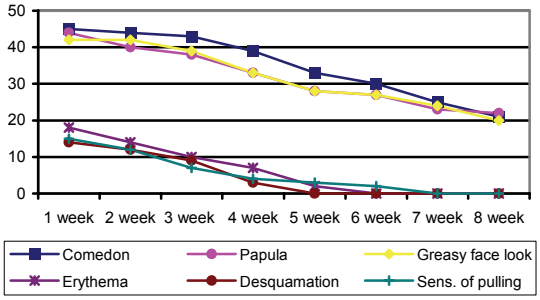


Fig. 1. The results of application 20% fruit acids - evaluation of symptoms score and score of undesirable effects with the first sub-group

Table 2. The results of application 40% fruit acids - evaluation of symptoms score and score of undesirable effects with the second sub-group

Variables/ Number	1. week	2. week	3. week	4. week	5. week	6. week	7. week	8. week
Comedon	40	38	35	29	25	19	16	14
Papula	36	34	31	25	22	17	18	15
Greasy face look	39	39	35	29	27	23	19	15
Erythema	25	26	22	15	14	10	6	3
Desquamation	25	21	21	14	15	13	7	5
Sens. of pulling	19	16	18	9	9	9	6	3

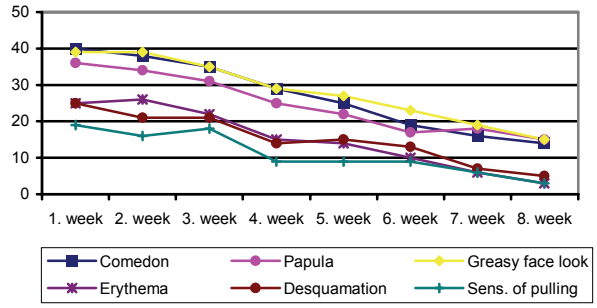


Fig. 2. The results of application 40% fruit acids - evaluation of symptoms score and score of undesirable effects with the second sub-group

Table 3. The results of application 70% fruit acids - evaluation of symptoms score and score of undesirable effects with the third sub-group

Variables/ Number	1. week	2. week	3. week	4. week	5. week	6. week	7. week	8. week
Comedon	40	37	37	26	24	16	14	14
Papula	39	39	29	26	23	22	13	13
Greasy face look	43	40	37	30	23	20	15	15
Erythema	38	39	37	41	38	31	27	27
Desquamation	32	34	43	41	35	32	29	24
Sens. of pulling	31	36	38	39	35	31	28	26

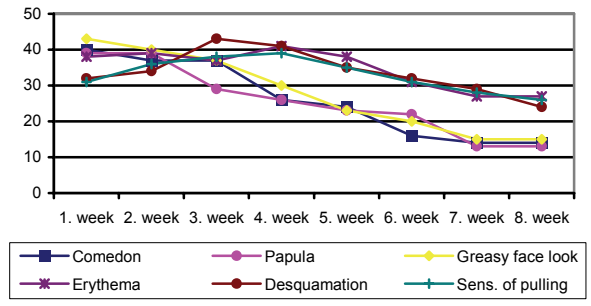


Fig. 3. The results of application 70% fruit acids - evaluation of symptoms score and score of undesirable effects with the third sub-group

Table 4. The evaluation of symptoms score and score of undesirable effects with the fourth sub-group

Variables/ Number	1. week	2. week	3. week	4. week	5. week	6. week	7. week	8. week
Comedon	45	44	41	37	32	29	22	19
Papula	44	40	37	33	28	27	20	19
Greasy face look	42	42	36	31	28	26	21	18
Erythema	18	14	11	8	2	0	0	0
Desquamation	14	13	9	3	0	0	0	0
Sens. of pulling	15	12	7	4	3	2	0	0

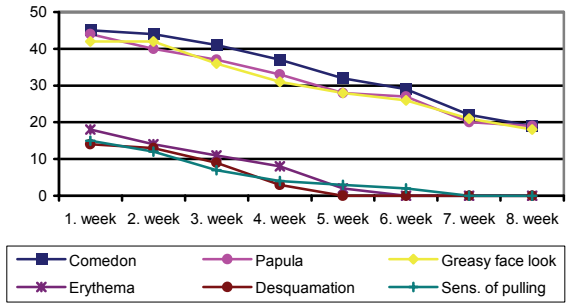


Fig. 4. The evaluation of symptoms score and score of undesirable effects with the fourth sub-group

Discussion

Researchers describe one of the effects of AHA on skin as mincing, unbuckling of scaly cell in stratum corneum, which permits a more frequent and faster regeneration of the upper layer of skin dead cells, which gives a new, younger look to the skin. This is a consequence of the accelerated exfoliation, which moderatea the apparition of small lines and crinkles (11, 12). Lower concentrations (20-35%) are used in cosmetic salons for an intensive superficial peeling, with an obligatory neutralization after certain time. In dermatology, concentrations of 40%, 50% and 70% are used for deep peeling and treatment of acnes and scares (6).

To the consumers, this process seems to be absolutely clear and acceptable, and they are more convinced with the fact that AHA are natural substances, which makes them feel better, safer and cleaner.

In the studies performed at many universities and research centers (Hanhmann, Pennsylvania, Ohio State, Temple, UCLA) it was approved that AHA effectively cure dry skin and extremely dry skin, open and clean pores, ameilor structure of skin, reduce problems of oiled skin and acnes, protect from bad influence of agressive substances (such as e.g. detergents), decrease dispigmentation of skin and dimples with older population (especially in combination with hydrohinon), serve as prevention in therapeutic purposes (5).

The most important indicator of efficiency of these products is pH value of the products, because it directly leads to the change of skin's pH value (10). Products

with lower pH values have bigger content of AHA in acid form, and only acids could accelerate regeneration of skin cells and strengthen other cosmetic activities due to specific mechanism of action.

In the research which included 32 examinees, with four concentrations of acids and after four weeks ameliorations were visible, and after 8 weeks they were even more distinct (10). The obtained results are similar to the results of other researchers.

The examinees (patients) with the same or approximate clinical condition were treated by various concentrations of acids and conclusions are:

• In the first sub-group of examinees treated with Dr Murad fruit acids (20%), neutral hydrant cream for daily usage and Plantoderm unquent for nightly usage, along with a good-quality life during the therapy (without redness of face, desquamation and sense of pulling) the amelioration of skin came gradually, (amelioration corresponds to the results of the regular cosmetic care with anti-inflammatory substances, epythelizants Plantoderm and customized wettability of skin by hydrant creams.

Thist points to a clearly cosmetic effect of fruit acids (20%). The advantage of the mentioned acid is that during this therapy there was not a regular cleaning of comedones, which was the case with the fourth sub-group (table 1 and figure 1).

• The second sub-group of examinees treated with fruit acids (40%), neutral hydrant cream for daily usage and Plantoderm unguent for nightly usage, visibly showed amelioration after the second therapy, and the results were clear after the fourth and the fifth therapy. Until the end of the therapy, long lasting erythema got pasty, there were not any papules, and scares as a consequence of acnes got flimsy. Life during the therapy was satisfactory. Desquamation was poor or absent, erythema as well. Regular care contributed largely to obtaining these results. A great deal to these result had regularly tendance (table 2 and figure 2).

• The third sub-group of examinees treated with fruit acids (70%), neutral hydrant cream for daily usage and Plantoderm unguent for nightly usage, also had good results, concerning the decrease or disappearance of comedons and papulas. Changes, like intensive desquamation and redness of face were ″undesirable effects″, especially at examinees who did not regularly apply home care. The time of exposition was shortened because of the displeasing sensations like "incandescence", while objective reasons did not exist (table 3 and figure 3).

• In the fourth sub-group of examinees, who did not use AHA, but only neutral hydrant cream for daily usage and Plantoderm unguent for nightly usage, the amelioration came slower, the expression of comedones was made once in two weeks, and due to regular tending skin looked better (table 4 and figure 4).

Conclusion

Peeling by fruit acids (AHA) is an important therapeutic method in treatment of acne comedonica et papulosa In the first sub-group treated by AHA (20%) minimal effects were obtained, in the second sub-group treated by AHA (40%) good results without undesirable effects were obtained and in the third sub-group treated by AHA (70%) good results with great undesirable effects were obtained.

The best and the fastest effects of amelioration were obtained by using AHA acids 40%.

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EFEKTI PONOVLJENIH SUPERFICIJALNIH PEELINGA ALFA HIDROKSI KISELINAMA KOD PACIJENATA SA OBOLJENJEM AKNE TIP I

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Kratak sadržaj: *Acne vulgaris je oboljenje pilosebacealnog folikula multifaktorijalne prirode. Predstavljaju najčešće hronično oboljenje adolescentne dobi. Nastanak akni vezuje se za kožne pore, odnosno folikule dlaka i pripadajuće lojne zlezde. Predilekciono mesto za nastanak akni jesu seboroične regije, a primarna promena koja se javlja jeste mitiser ili komedon Prema nekim istraživanjima oko 80 % mladih između 12 i 24 godina susreće se sa tim oboljenjem. Obzirom na raznolikost mogućih uzroka koji dovode do nastanka akni i u lečenju postoji više pristupa. Osim klasičnih, u novije vreme zbog značajnih rezultata, sve veću pažnju privlači tretman akni preparatima na bazi AHA kiselina. Takođe se ističe veliki značaj adekvatne nege u toku terapije u smislu hidratacije i antizapaljenjskog i epitelizantnog sredstva.*
Ciljevi ovog istraživanja su da se utvrdi efikasnost peelinga AHA kiselinama, vrednuju različite koncentracije kiselina (20%, 40%, 70%), utvrde adekvatne terapijske koncentracije, ispitaju neželjeni efekti ove terapije i utvrdi značaj svakodnevne nege.
Uzorak od 60 ispitanika podeljen je u četiri podgrupe (pacijenti sa acne comedonica et papulosa). Ispitivanje je izvršeno u Centru estetske medicine Dom zdravlja Niš.
Kao mesta testiranja procenjivana su polja 5x5cm, desni i levi obraz paralelno.
Terapija je trajala 8 nedelja, jednom nedeljno kada su vršene analiza, klinički pregled i unos ocena u protokol istraživanja. Svi ispitanici su završili kompletan tretman.
Najbolji, najbrži efekti poboljšanja postignuti su upotrebom 40 %-tne AHA kiseline.

Ključne reči: *alfa hidroksi kiseline, acne tip comedonica et papulosa, superficijalni hemijski peeling*