

NEWS RELEASE !

SIX MONTH REVIEW

Test Performed:

CONTROLLED A R LABS BIOTIN TEST

Products Tested:

2oz. BIOTIN CONCENTRATE CREME, 8oz. SHAMPOO TREATMENT
with BIOTIN and VITAMIN/MINERAL COMPOUND with ZINC

Testing Facility:

Tests were carried out by one of the premier Trichology Clinics in the U.S. The owner of the Clinic, a certified Trichologist who was last years Chairperson for the International Association of Trichologists, was personally responsible for overseeing the tests. The first data was collected April 10th, 1984.

Test Goals:

To determine, as precisely and scientifically as possible, with complete documentation;

- a) Whether or not hair loss is being reduced with the use of A R Labs products and,
- b) whether dormant hair follicles are being stimulated into the Anagen (regrowth) phase.

Test Procedures:

1. Five male test subjects, ages 22 to 28, were chosen after screening to determine that their major cause of hair loss was from male pattern baldness.
2. An initial Anagen (growing) versus Telogen (dormant) ratio was developed with the use of a polarized light

(Cont.)

<u>SUBJECT</u>	<u>AGE</u>	<u>DURATION</u> of LOSS	<u>% LOSS</u>	<u>HAIR COLOR</u>	<u>ORIGINAL ANAL</u> % ANA	<u>%CAT/TEL</u>	<u>AVG. DIAMETER</u> ANA	<u>C/T</u>	<u>SIX MONTHS</u> %ANA	<u>%C/T</u>	<u>AVG DIAMETER</u> ANA	<u>C/T</u>
101	27	10 yrs	30	Blonde	45	55	42.6	90.6	12.5	87.5	82	45.7
202	22	2 yrs	10	Brown	60	40	58.5	31.8	70	30	67.2	88
303	28	1 yr	40	Black	46	54	70.6	92.5	50	50	83.2	62.4
505	28	5 yrs	40	Brown	56	44	68	101	50	50	101.7	89
506	24	3 yrs	30	Brown	20	80	37.3	110.5	56	44	41.6	109.3

OBSERVATIONS AND NOTATIONS

CLIENTS OBSERVATIONS AND COMMENTS

- *1 client experienced severe trauma during 4th month; severed three fingers which may account for increase loss resulting in decreased % Ana
- *2 client left project end of third month; increase in % phases and diameters fail to support his reasoning in this decision
- *3 client was previously involved in other project¹ as test subject, abandoned because of severe scalp irritation two months prior to this project
- *4 client had previously used another mfg.²product who assure him his hair looks thicker
- *5 client released for medical examination

Upjohn, Inc.
Erikson

client has received comments and compliments from friends

HOWARD I. MAIBACH, M. D.
UNIVERSITY OF CALIFORNIA MEDICAL CENTER
SAN FRANCISCO 94143
415-686-4256

June 8, 1983

Mr. Greg A. Taylor
AR Laboratories
730 Walnut Ave.
Burlingame, CA 94010

Dear Mr. Taylor:

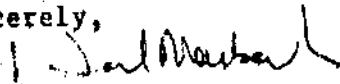
Our recently concluded In Vitro Percutaneous Absorption tests using AR Laboratories' Creme and Lotion Formulations are attached. The chemical used was ¹⁴C biotin.

The studies included a single application for a 24 hour period and a single application for a 48 hour period. All applications showed skin absorption and penetration. Maximum absorption occurred within six hours.

An additional study was done in which the creme and lotion were applied and allowed to remain for 24 hours and then the creme and lotion were re-applied and absorption studied for an additional 24 hours. The double applications showed an increase in skin penetration over the single application.

Please contact me if further information is required.

Sincerely,



Howard I. Maibach, M.D.

INTERNATIONAL ASSOCIATION OF TRICHOLOGISTS
185 Elizabeth St., Suite 610,
Sydney, NSW 2000, Australia
TEL:(02) 267 1384

INFORMATION UPDATE

Feb. 1989

RELEVANCE OF ZINC AND AZELAIC ACID TO SEBACEOUS ACTIVITY AND TO ANDROGENETIC ALOPECIA.

An article in the British Journal of Dermatology (1988) 119, 627-632, is titled 'Inhibition of 5 α Reductase activity in human skin by zinc and azelaic acid'. The effects of zinc sulphate and azelaic acid on 5 α Reductase activity in human skin were studied using an in vitro assay with 1,2 [³H] - Testosterone as substrate. When added at concentrations of 3 or 9 Mmol/L, zinc was a potent inhibitor of 5 α Reductase activity. At high concentrations, zinc could completely inhibit the enzyme activity. Azelaic acid was also a potent inhibitor of 5 α Reductase; inhibition was detectable at concentrations as low as 0.2 Mmol/L and was complete at 3 Mmol/L. An additive effect of the two inhibitors was observed. Vitamin B6 potentiated the inhibitory effect of zinc but not of azelaic acid, suggesting that two different mechanisms are involved.

When the three substances were added together at very low concentrations - which had been shown to be ineffective alone - 90% inhibition of 5 α Reductase was obtained. If this inhibition is confirmed in vivo, zinc sulphate combined with azelaic acid could be an effective agent in the treatment of androgen-related pathology of human skin.

(Editor's note - There is no doubt that sebaceous activity can be slowed by giving 'zinc-deficient' patients a zinc supplement. The above article also suggests that androgenetic alopecia could also be slowed by zinc and azelaic acid combinations. Note also that Vitamin B6 is necessary for the absorption of zinc.)



Dear Greg,

Even though it is a bit early to expect any results, I did a follow up test on our test client. I only examined the pattern loss area since I was hardly expecting any changes at this point. Actually, I only did the test out of curiosity.

When this man started about six weeks ago, he had 68% catagen/telegen (dormant) and 32% anagen (growing). Also, the hair was removed from the scalp very easily. Currently he has 70% Anagen Phase Hairs and 30% Catagen/Telegen Hairs.

Other observations; Hairs were very resistant to removal. Several small vellus hairs were in the anagen phase. Four hairs broke off upon epilation. The microscopic analysis of these hairs indicated a competent corticle structure which was confirmed by stress testing. This is an indication that these four hairs were probably very well formed anagen bulbs with an excellent attachment to the scalp.

These results are too good to be true. Nothing I am aware of is anywhere near that effective. We are going to do a complete follow up test in a while, just to make sure I didn't suffer from delusions that day. Meanwhile, what sort of arrangements do you make with your distributors?

Regards,

Eric L. Lorup
Eric L. Lorup, IAT

FROM: Marlene Stachowiak
TO: Greg Taylor
AR Labs

SUBJECT: Six Months Review of test subjects utilizing AR Biotin products

SUMMATION:

- 2 subjects display decrease in actively growing Anagen phase hairs
- 3 increase

- 5 display increase in hair bulb diameter of growing phase hairs
- 4 display increase in hair bulb diameter of resting phase hairs

- 3 are very well pleased with the results
- 2 have dropped out of the project

- 2 have a previous experience point of comparison and have stated their preference for AR products

DISCUSSION:

March, 1984, in response to newspaper advertisement: forty-two interviews of which: 7 rejections based on excessive use of drugs, prescription and street; seven accepted, 2 failed to respond to the assigned time of commencement; 5 became the final number, of which 2 are no longer participating.

First data collection dated: April 10, 1984

Original agreement with participants was minimum six months, with possible requirement of one year.

October visits, each was given option to discontinue as having fulfilled minimum time requirement. Each preferred to continue the full year. None are aware of the numbers in the study, which has been withheld for reason of not wishing to influence their personal assessments and because it is deemed poor practice as image producing for AR Laboratories.

microscope. (20 hairs are plucked from the hair loss area of each client. The specialized microscope uses polarized light which allows the Technician to tell if the hairs are in the growing phase or the dormant phase. This ratio is directly related to the clients hair loss. Higher Anagen counts, less hair loss.) Photos, through the microscope, were also taken to document the results.

3. All removed hairs were measured for the hair shaft size. These measurements will increase as the hair bulb increases in size, reflecting an improvement in the health of the hair follicle.

Test Length:

This is a six month review. Test will continue for a full year.

Test Results:

GENERAL INFORMATION

SUBJECT	AGE	DURATION OF LOSS	PERCENTAGE OF LOSS	HAIR COLOR
# 1	27	10 yrs.	30 %	Blond
# 2	22	2 yrs.	10 %	Brown
# 3	28	1 yr.	40 %	Black
# 4	28	5 yrs.	40 %	Brown
# 5	24	3 yrs.	30 %	Brown

TEST RESULTS

	ORIGINAL ANALYSIS % GROWING/% DORMANT (ANAGEN) (TELECON)		ANALYSIS AT END OF 6 MO. PERIOD % GROWING/% DORMANT		ORIGINAL DIAMETER OF HAIR SHAFT (MICRONS)	6 MO. DIAMETER OF HAIR SHAFT (MICRONS)
# 1	45%	- 55%	12.5%	- 87.5%	42.5	82.
# 2	60%	- 40%	70%	- 30%	58.5	67.2
# 3	46%	- 54%	50%	- 50%	70.6	83.2
# 4	56%	- 44%	50%	- 50%	68.	101.7
# 5	20%	- 80%	56%	- 44%	37.3	41.6

(CONT.)

Observations and Notations

1 Client experienced a severe trauma during the 4th month; accidentally severed three fingers, creating tremendous physical and emotional stress. This accounts for increased hair loss resulting in a decreased Anagen (growing) count.

2 Client left test project at the end of the third month since he felt there was no change in his hair loss condition. Increases in his Anagen phase hairs and in his hair diameters fail to support his reasoning in this decision.

3 Client was previously involved in a Minoxidil project as a test subject. He abandoned that project because of severe scalp irritation, two months prior to this project.

4 Client had previously used another product in an attempt to stop his hair loss.

5 Client was released at the end of the six month test for an unrelated medical problem.

Client Observations and Comments

1 Feels his hair is "Looking better all the time", is growing well and his hair appears healthier using the products.

2 Client felt there was no change at the end of the third month.

3 Client states his hair loss has slowed down and is stabilizing and is well satisfied.

4 Although some hair loss is still occurring he has received comments and compliments from his friends who assure him his hair looks thicker, which is directly related to the increases in his hair diameters.

5 Client showed a remarkable improvement in his hair loss condition but was released for medical treatment of an unrelated problem.

Summation

If you eliminate Client # 1 because of the severe trauma he encountered, 3 out of 4 subjects displayed an increase in the number of actively growing Anagen phase hairs. (75%!) All 5 displayed an increase in the hair bulb diameters. Three of the subjects are very pleased with the results, One was released for medical reasons and one dropped out of the project. Two of the subjects have used other products to help stop their hair loss and have stated their preference for A R products.