

PERIODONTAL PATHOSIS IN MAN: IX. EFFECT OF COMBINED VERSUS ANIMAL PROTEIN SUPPLEMENTATION UPON GINGIVAL STATE*

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INTRODUCTION

In an earlier report¹ it was shown that a significant reduction in gingivitis followed the administration of a protein supplement for four days. This report is designed to confirm the original observations. In addition, it will compare, upon gingival state, the relative effects of a combination of incomplete proteins furnishing together all essential amino acids versus a complete animal protein supplement.

METHODS AND RESULTS

Eighty junior dental students participated in this experiment. Gingivitis, graded on a four-point system (Table 1) was determined for the maxillary and mandibular anterior teeth and a mean gingivitis score derived. On a random

TABLE I — GINGIVITIS EVALUATION

0 = no gingivitis present
1 = slight hyperemia, swelling and loss of gingival stippling; patient asymptomatic
2 = moderate hyperemia, swelling and loss of stippling, tendency to bleed, may be tender or painful
3 = marked hyperemia, swelling and loss of tissue tone, so-called spontaneous bleeding, may be ulcerated, tender or painful

basis, one-half of the first group of 44 students (22 in number) was given 40 grams per day of the combined protein supplement¹ (Table 2). The other half of the group (22 students) received 40 grams daily of an indistinguishable placebo (methylcellulose). Both preparations were in tablet form. In Group II, consisting of 36 students, one-half of the group on a random basis (18 in number) was given 40 grams per

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day of complete animal protein, as cookies, derived from tripe flour. The other 18 students received a relatively indistinguishable routine sugar cookie supplement. The mean gingivitis score was redetermined four days later by the

TABLE II — COMPOSITION OF PROTEIN TABLETS

average weight	760 mg.
protein content	85 per cent
derived from	
soybean protein concentrate	
casein	
gelatin	
Essential Amino Acid Content (per 12 tablets)	
isoleucine	485 mg.
leucine	715 mg.
lysine	560 mg.
methionine	135 mg.
phenylalanine	450 mg.
threonine	350 mg.
tryptophane	95 mg.
valine	460 mg.

TABLE III — DISTRIBUTION OF GINGIVAL SCORES
AT THE INITIAL VISIT

score	number and percentage of areas
0	181 (28.5%)
1	427 (67.2%)
2	27 (4.3%)
total	635 (100.0%)

Reprinted from *Journal of Dental Medicine*, Vol. 19, No. 2, April, 1964, pp. 82-85

TABLE IV — GINGIVAL CHANGE

	<i>combined protein group</i>	<i>placebo group</i>	<i>tripe protein group</i>	<i>placebo group</i>
improvement	19 (87%)	2 (9%)	16 (89%)	3 (17%)
no improvement	3 (13%)	20 (91%)	2 (11%)	15 (83%)
total	22 (100%)	22 (100%)	18 (100%)	18 (100%)

TABLE VI — EFFECT OF FOUR-DAY COMBINED VERSUS TRIPE PROTEIN VERSUS PLACEBO SUPPLEMENTATION UPON MEAN GINGIVAL SCORES

	<i>combined protein group</i>		<i>placebo group</i>		<i>tripe protein group</i>		<i>placebo group</i>	
	<i>initial</i>	<i>final</i>	<i>initial</i>	<i>final</i>	<i>initial</i>	<i>final</i>	<i>initial</i>	<i>final</i>
	0.5	0.4	0.8	0.9	1.1	0.9	0.4	0.4
	1.0	0.4	0.6	0.6	0.8	0.8	0.5	0.5
	1.0	0.4	0.7	0.7	1.0	0.6	0.9	0.9
	0.6	0.4	1.0	1.0	0.6	0.3	0.5	0.6
	0.9	0.4	0.6	0.9	1.0	0.5	0.6	0.9
	0.6	0.4	0.9	0.9	1.0	0.9	0.1	0.3
	0.8	0.6	0.6	0.8	0.8	0.6	0.8	0.9
	0.9	0.6	1.0	0.9	1.0	0.6	0.5	0.5
	0.6	0.4	0.9	1.0	0.8	0.5	0.8	0.6
	0.6	0.6	0.6	0.8	1.1	0.6	1.0	1.0
	0.6	0.8	0.8	1.0	1.0	0.6	0.5	0.6
	0.4	0.3	0.6	0.6	0.8	0.5	1.1	1.1
	0.8	0.4	0.7	0.9	1.4	1.0	0.8	0.7
	0.9	0.5	0.5	0.6	0.5	0.5	0.8	0.8
	1.0	0.5	0.6	0.8	0.9	0.8	0.8	0.9
	0.6	0.5	0.8	0.8	0.9	0.6	0.6	0.6
	0.6	0.5	0.5	0.5	0.5	0.4	1.0	1.0
	0.9	0.7	0.6	0.6	1.0	0.6	0.9	0.8
	0.6	0.4	0.6	0.5				
	0.8	0.8	0.8	0.9				
	1.0	0.6	1.0	1.0				
	0.6	0.3	0.6	0.8				
mean	0.74	0.49	0.71	0.79	0.90	0.62	0.70	0.72
S.D.	0.19	0.14	0.16	0.17	0.22	0.18	0.25	0.23
P	<0.001		>0.100		<0.001		=0.500	
percentage change	-34%		+11%		-31%		+3%	

TABLE V — EFFECT OF FOUR-DAY COMBINED VERSUS TRIPE PROTEIN SUPPLEMENTATION UPON GINGIVAL STATE

gingi- val grade	combined protein group		placebo group		tripe protein group		placebo group	
	initial	final	initial	final	initial	final	initial	final
0	45 (26.3%)	90 (52.6%)	48 (28.2%)	37 (21.8%)	38 (26.6%)	60 (42.0%)	50 (33.1%)	48 (31.8%)
1	126 (73.7%)	81 (47.4%)	122 (71.8%)	133 (78.2%)	83 (58.0%)	76 (53.1%)	96 (63.6%)	94 (62.3%)
2	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	22 (15.4%)	7 (4.9%)	5 (3.3%)	9 (5.9%)
total	171 (100.0%)	171 (100.0%)	170 (100.0%)	170 (100.0%)	143 (100.0%)	143 (100.0%)	151 (100.0%)	151 (100.0%)

same examiner with no knowledge of the previous gingival values or the type of supplementation.

Table 3 shows the distribution of gingival scores at the start of the experiment. It will be noted that only 28.5 per cent of the examined area could be rated as zero. Also, mention should be made that the majority of the scores (67.2 per cent) suggested slight hyperemia in asymptomatic patients.

Table 4 shows that 87 per cent of the combined and 89 per cent of the tripe protein-treated groups showed a reduction in gingivitis while only 9 and 17 per cent of the control groups, respectively, demonstrated a gingivitis decrease.

Table 5 provides the original data and Table 6 summarizes the means scores for all the subjects. It will be noted that a significant reduction in gingivitis occurred only in the protein-treated groups. Specifically, the decrease was 34 per cent with the combined supplement and 31 per cent with the tripe protein. Also, mention should be made of the insignificant changes in both of the placebo groups.

DISCUSSION

The evidence presented here appears to indicate that protein supplementation, in the amount given and for the period administered, exerts a beneficial effect upon gingiva by virtue of a reduction in gingival score. The findings are even more interesting in view of the fact that the two protein studies (tripe versus combined) were conducted at different times upon different subjects. Finally, it is of note that the gingival changes in the two protein groups are very similar.

SUMMARY

A study of protein versus placebo supplementation for four days in 80 dental students resulted in a significant reduction in gingivitis only in the protein-treated groups.

BIBLIOGRAPHY

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**PATHOSIS PERIODONTAL IN LE HOMINE: IX. EFFECTO,
SUPER LE STATO DEL GINGIVAS, DE UN SUPPLEMENTATION
DE PROTEINA (1) COMBinate E (2) ANIMAL**

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SUMMARIO IN INTERLINGUA

Octanta juvene studentes de dentisteria participava in istle experimento. Gingivitis, classate in un scala de quatro grados, esseva determinate pro le maxillari e mandibulari dentes anterior, e un indice medie de gingivitis esseva establite. A base aleatori, un medietate del prime gruppo de 44 studentes recipeva 40 grammas per die del supplemento de proteina combinate. Le altere medietate recipeva 40 grammas per die de un non-distinguibile placebo (methylcellulosa). In le secunde gruppo, consistente de 36 studentes, un medietate recipeva 40 grammas per die de complete proteina animal ab farina de tripa, presentate in le forma de tartas. Le altere membros del gruppo recipeva un relativamente indisetinguibile tarta routinari a sucro. Le indice medie de gingivitis esseva determinate de novo quatro dies plus tarde.

Le evidentia pare indicar que un supplementation de proteina, in le quantitates usate e durante periodos del ordine de illo in iste experimento, exerce un effecto benefic super le gingiva.