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The "Ideal" Daily Niacin Intake

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Summary: This approach indicates that the healthier the sample, the greater the niacin intake. Under the conditions of this experiment, approximately 115 mg of niacin may be designated as the "ideal" daily allowance. This is six or seven times the RDA of 12 to 20mg for adult males and females.

It is recognized that the "ideal" as a theoretic endpoint is nonexistent since there is biochemical individuality and because the art of measuring leaves much to be desired. Nonetheless, the technique utilized here provides a mechanism and a goal not previously considered.

Introduction

The adult RDA (Recommended Dietary Allowance) for niacin has been set at 16 to 20 mg for the adult male and 12 to 16 mg for the adult female (Food and Nutrition Board, 1974). The Food and Nutrition Board recognizes that the estimates of niacin requirements are complicated because a certain amount of tryptophan is converted to niacin in the human. Notwithstanding, there is no claim that the dosage of niacin recommended by the Food and Nutrition Board is intended as the "ideal" daily intake for the maintenance of optimal general health.

Earlier studies (CHERASKIN 1974, CHERASKIN and RINGSDORF 1974, CHERASKIN *et al.* submitted for publication[a]; CHERASKIN *et al.*, submitted for publication[b]) have attempted to develop a true "ideal" daily consumption of refined carbohydrates, vitamin A, and vitamin C on the hypothesis that relatively symptomless and sign-free persons are healthier than those with clinical symptoms

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and signs. Therefore, the intake of such groups might well provide a basis for designating the "ideal" daily niacin consumption.

Method of Investigation

One thousand fifty-three dentists and their wives were evaluated in terms of daily reported niacin consumption as judged from a food frequency questionnaire, the Dietronics F-1 Questionnaire. This dietary analysis method also includes the niacin-niacinamide contents of vitamin supplements. Clinical state was graded by the Cornell Medical Index Health Questionnaire (CMI). The CMI is a self-administered test consisting of 195 questions. Each question is answered by circling the word "yes" or "no". The questions are phrased so that the affirmative answers indicate pathology (signs and symptoms). The clinical findings in this report are the total number of affirmative CMI responses (CMI score).

Results

Table 1 shows (line 1) the daily niacin consumption of the entire group of doctors and their wives. In this sample of 1053, the CMI score ranged from zero to 125 with a mean and one standard deviation of 15.9 ± 12.4 . The daily reported niacin intake ranged from 3 to 270 mg with a mean and standard deviation of 67.1 ± 66.8 . This is approximately three- to fourfold the amount designated as the RDA. The reason for this is that many of these subjects supplemented their diet daily with multiple vitamin preparations containing niacin or niacinamide. Parenthetical mention should be made that both the American Medical Association (1962) and the American Dental Association (1969) have

Tab. 1: Relationship of reported daily niacin consumption (food frequency questionnaire) and reported total clinical findings (Cornell Medical Index Questionnaire) in a presumably healthy male and female sample

CMI scores	n	CMI		Niacin	
		range	mean and S. D.	range	mean and S. D.
1) entire sample	1053	0-125	15.9 ± 12.4	3-270	67.1 ± 66.8
2) < 50	1030	0- 49	14.8 ± 10.0	3-270	67.5 ± 66.8
3) < 40	1000	0- 39	14.0 ± 8.8	3-270	68.6 ± 67.2
4) < 30	925	0- 29	12.4 ± 7.1	3-270	69.1 ± 67.8
5) < 20	752	0- 19	9.8 ± 4.9	5-270	70.1 ± 67.8
6) < 10	376	0- 9	5.7 ± 2.3	7-250	74.7 ± 70.3
7) < 5	115	0- 4	2.7 ± 1.2	11-250	80.8 ± 73.3
8) < 4	75	0- 3	2.1 ± 0.9	11-250	84.3 ± 74.7
9) < 3	47	0- 2	1.5 ± 0.7	11-250	91.6 ± 83.6
10) < 2	16	0- 1	0.6 ± 0.5	11-240	99.2 ± 88.1
11) < 0	7	0	0.0 ± 0.0	19-235	115.0 ± 86.4

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indicated that the type of doctor interested in his own health has above-average health.

Since the niacin intake of this group exceeded RDA standards, it would generally be regarded as "ideal" or "optimal". However, proceeding through Table 1, it becomes obvious that progressively fewer symptoms and signs are associated with an increasing intake of niacin. Deleting all subjects with 50 + symptoms and signs leaves a sample size of 1030 (line 2), a mean and standard deviation CMI score of 14.8 ± 10.0 and a niacin mean and standard deviation of 67.5 ± 66.8 mg. Exclusion of all subjects with 40 + symptoms and signs (line 3) nets a sample with a daily niacin intake of 68.6 ± 67.2 mg. Proceeding through the 11 lines of this table, the daily niacin intake slowly rises as the number of allowable clinical symptoms and signs (CMI score) is reduced.

Table 2 indicates that there are statistically significant differences ($P < 0.05$) in the daily niacin intake when one compares the consumption of the entire sample to those with less than five (< 5) clinical findings. The significance holds

Tab. 2: Statistical significance of the relationship of niacin and reported clinical findings (CMI)

1) entire sample versus	n	t	P
2) CMI < 10	376	1.771	> 0.050
3) CMI < 5	115	2.037	< 0.050 *
4) CMI < 4	75	1.970	< 0.050 *
5) CMI < 3	47	2.032	< 0.050 *
6) CMI < 2	16	1.670	> 0.050
7) CMI 0	7	1.838	> 0.050

* Statistically significant difference of the means.
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for < 4 and < 3 clinical findings. However, the small sample size of < 2 (16 subjects) and zero clinical findings (7 subjects) precludes a meaningful statistical analysis.

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