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### FAMILIAL ENZYMIC PATTERNS: IV. LACTIC DEHYDROGENASE [LDH] IN THE DENTIST AND HIS WIFE [FINAL REPORT]

by

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#### Abstract

One hundred seventy-three dental practitioners and their wives were studied in terms of lactic dehydrogenase [LDH]. The data revealed a statistically significant correlation coefficient in the married couples [ $r = +0.896$ ,  $P < 0.01$ ]. This study supports an earlier smaller experiment with 48 married couples that environmental influences undoubtedly play a major role since married couples are rarely genetically related. Additionally, the correlation in the case of lactic dehydrogenase is higher than in any other clinical, biochemical, dietary, and enzymic parameter that we have studied thus far.

#### Introduction

Earlier reports disclosed a significant positive correlation of general symptoms and signs [1,2] and psychologic responses [3] in married couples. Subsequent studies revealed similar parallelisms with regard to blood glucose [4] and serum cholesterol [5]. In small and preliminary samples, like patterns were observed with serum glutamic oxalacetic transaminase [6] and lactic dehydrogenase [7]. A larger sample confirmed the earlier observation with serum glutamic oxalacetic transaminase [8]. Finally, a series of reports designed to study familial dietary patterns also reveal positive correlations in the family unit with regard to total caloric consumption [9] and total and refined carbohydrate [10,11].

This series of reports is intended to study the enzymic pattern in the family unit. This particular report attempts to reexamine the earlier observations made with a small sample in terms of lactic dehydrogenase [LDH] [7]. Specifically, this report attempts to answer the following three questions:

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1. What is the relationship of lactic dehydrogenase [LDH] in married couples?
2. How does the husband-wife correlation compare with the patterns in the husband versus an age-paired unrelated female group?
3. What conclusions may be drawn from these two sets of findings?

### Method of Investigation

One hundred seventy-three dentists and their 173 wives shared in this study. These individuals are participants in a multiphasic screening program conducted in Florida under the auspices of the Southern Academy of Clinical Nutrition, in Los Angeles under the sponsorship of the Southern California Academy of Nutritional Research, in Columbus under the aegis of the Ohio Academy of Clinical Nutrition, in Connecticut under the guidance of the Northeast Academy of Clinical Nutrition, and in the San Francisco area under the supervision of the Northern California Academy of Nutritional Research. The age patterns are summarized in Table I.

Table 1  
age distribution

| age groups | husbands     | wives         |
|------------|--------------|---------------|
| 20-29      | 3 [ 1.7%]    | 11 [ 6.4%]    |
| 30-39      | 60 [ 34.7%]  | 77 [ 44.5%]   |
| 40-49      | 74 [ 42.8%]  | 66 [ 38.2%]   |
| 50-59      | 31 [ 17.9%]  | 17 [ 9.8%]    |
| 60-69      | 5 [ 2.9%]    | 2 [ 1.2%]     |
| total      | 173 [100.0%] | 173 [100.0%]* |
| mean       | 43.1         | 39.7          |
| S.D.       | 7.6          | 7.6           |
| minimum    | 29           | 25            |
| maximum    | 66           | 61            |
| range      | 37           | 36            |

\*approximate

Lactic dehydrogenase [LDH] was measured [as units] in each subject. Table II summarizes the findings. It will be noted that there is no statistically significant difference between the husbands and their wives [ $t = 0.841$ ,  $P > 0.400$ ].

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Table II  
Lactic dehydrogenase [LDH]  
distribution

| LDH<br>groups<br>[units] | husbands     | wives         |
|--------------------------|--------------|---------------|
| <50                      | 0 [ 0.0%]    | 2 [ 1.2%]     |
| 50- 69                   | 15 [ 8.7%]   | 16 [ 9.2%]    |
| 70- 89                   | 28 [ 16.2%]  | 29 [ 16.8%]   |
| 90-109                   | 32 [ 18.5%]  | 34 [ 19.7%]   |
| 110-129                  | 12 [ 6.9%]   | 13 [ 7.5%]    |
| 130-149                  | 13 [ 7.5%]   | 15 [ 8.7%]    |
| 150+                     | 73 [ 42.2%]  | 64 [ 37.0%]   |
| total                    | 173 [100.0%] | 173 [100.0%]* |
| mean                     | 179          | 167           |
| S.D.                     | 139          | 119           |
| t                        |              | 0.841         |
| P                        |              | >0.400        |
| minimum                  | 50           | 38            |
| maximum                  | 988          | 493           |
| range                    | 938          | 455           |

\*approximate

### Results

Question One: In order to resolve the first question, a correlation coefficient was performed for the husband versus the wife [Table III] with respect to LDH levels. It will be observed that there is statistically significant positive relationship [ $r = +0.896$ ,  $P < 0.01$ ]. Hence, in answer to the first question, dentists with high LDH levels are living with women with high levels; conversely, dental practitioners with low levels tend to live with women with low levels.

Question Two: A correlation coefficient was performed between the dentist and the age-paired non-wife and found to be [Table III] not significant [ $r = +0.001$ ,  $P > 0.05$ ]. Therefore, in answer to the second question, there is no significant correlation, with regard to LDH levels, in these men and women unrelated by marriage.

The additional question is whether time plays a role in these familial enzymic relationships. To resolve this question, the groups were subdivided into near-equal subgroups. Thus, one group of men ranged up to 43 years and the other group from 44 and up. The correlation coefficient [ $r$ ] is slightly higher in the younger versus the older group [ $+0.948$  versus  $+0.840$ ].

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Table III  
correlation coefficient of  
lactic dehydrogenase [LDH] levels

|  | number of<br>pairs | r      | P      |
|--|--------------------|--------|--------|
| husband versus wife                                    | 173                | +0.896 | <0.01* |
| husband versus unrelated female                        | 173                | +0.001 | >0.05  |
| wife versus unrelated female                           | 173                | +0.010 | >0.05  |
| husband versus wife<br>[husband's age <44]             | 96                 | +0.948 | <0.01* |
| [husband's age 44+]                                    | 77                 | +0.840 | <0.01* |
| husband versus unrelated female<br>[husband's age <44] | 96                 | +0.002 | >0.05  |
| [husband's age 44+]                                    | 77                 | +0.013 | >0.05  |
| wife versus unrelated female<br>[age <44]              | 120                | +0.023 | >0.05  |
| [age 44+]  | 53                 | -0.062 | >0.05  |

\*statistically significant correlation

### Discussion

Table IV summarizes the initial husband-wife correlation coefficients

Table IV  
husband versus wife  
correlation coefficients  
[initial findings]

| parameter                            | entire<br>sample | married couples<br>younger | older    |
|--------------------------------------|------------------|----------------------------|----------|
| general symptoms and signs           | +0.354**         | +0.264*                    | +0.412*  |
| psychologic findings                 | +0.286*          | +0.124                     | +0.502*  |
| serum cholesterol                    | +0.455**         | +0.174                     | +0.558** |
| daily total caloric consumption      | +0.425**         | +0.419**                   | +0.336*  |
| daily total carbohydrate intake      | +0.528**         | +0.473**                   | +0.652** |
| daily refined carbohydrate<br>intake | +0.520**         | +0.442**                   | +0.669** |
| SGOT [preliminary report]            | +0.215           | -0.023                     | +0.686** |
| SGOT [final report]                  | +0.338**         | +0.362**                   | +0.318** |
| LDH [preliminary report]             | +0.892**         | +0.937**                   | +0.877** |
| LDH [final report]                   | +0.896**         | +0.948**                   | +0.840** |

\*P <0.05

\*\*P <0.01

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for the entire sample and for the younger and older couples in terms of the clinical findings [1-3], biochemical observations [5], earlier and final serum glutamic oxalacetic transaminase [6,8], earlier lactic dehydrogenase studies [7], and dietary patterns [9-11]. It is noteworthy that, of all of the parameters studied, the correlation coefficients for lactic dehydrogenase are highest both in the preliminary and the final reports.

### References

1. Cheraskin, E. and Ringsdorf, W. M., Jr. Frequency of Reported Symptoms and Signs in the Dentist and his Wife. *Geriatrics* 23, 185 [1968].
2. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Clinical Patterns: I. Reported Symptoms and Signs in the Dentist and his Wife. *Geriatrics* 25, 123 [1970].
3. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Factors in Psychic Adjustment. *J. Amer. Geriat. Soc.* 17, 609 [1969].
4. Cheraskin, E., Ringsdorf, W. M., Jr., Setyaadmadja, A. T. S. H., Barrett, R. A., Sibley, G. T., and Reid, R. W. Environmental Factors in Blood Glucose Regulation. *J. Amer. Geriat. Soc.* 16, 823 [1968].
5. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Biochemical Patterns: I. Serum Cholesterol in the Dentist and his Wife. *J. Atheroscl. Res.* 11, 247 [1960].
6. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Enzymic Patterns: I. Serum Glutamic Oxalacetic Transaminase [SGOT] in the Dentist and his Wife. *Nutrit. Rep. Internat.* 1, 119 [1970].
7. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Enzymic Patterns: II. Lactic Dehydrogenase [LDH] in the Dentist and his Wife. *Nutrit. Rep. Internat.* 1, 125 [1970].
8. Cheraskin, E., Ringsdorf, W. M., Jr., and Medford, F. H. Familial Enzymic Patterns: III. Serum Glutamic Oxalacetic Transaminase [SGOT] in the Dentist and his Wife [Final Report]. [Submitted for publication]
9. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Dietary Patterns: I. Daily Caloric Consumption. *J. Appl. Nutrit.* 21, 70 [1969].
10. Cheraskin, E. and Ringsdorf, W. M., Jr. Familial Dietary Patterns: II. Daily Carbohydrate Consumption. *J. Appl. Nutrit.* 22: 17 [1970].
11. Cheraskin, E., Ringsdorf, W. M., Jr., and Hicks, B. S. The Sweet Sickness Syndrome: I. The Refined Carbohydrate Consumption. *J. Internat. Acad. Prev. Med.* 1, 107 [1974].

Received for publication: June 16, 1975.