

# **UNIVERSITY OF MINNESOTA**

SCHOOL OF PUBLIC HEALTH • LABORATORY OF PHYSIOLOGICAL HYGIENE  
STADIUM GATE 27 • MINNEAPOLIS, MINNESOTA 55455

**May 7. 1964**

Dr. David J. Vail  
Medical Director  
Minnesota Department of Public Welfare  
St. Paul, Minnesota 55101

Dear Dr. Vail:

This is a progress report for the research project entitled "Dietary factors and blood lipids related to heart disease" which is being conducted by Ancel Keys, Francisco Grande and Joseph T. Anderson in the Grandview unit of Faribault State School and Hospital.

The practical importance of answering the question about reducing heart disease by dietary control has recently been emphasised by the action of the U.S. Public Health Service in setting up the new National Diet-Heart Study. This study has involved over 200 Faribault patients and over 900 free-living American men in 4 cities. The Faribault program has been directed by Dr. Ivan Frantz and the Twin City program by Dr. Ancel Keys, *Dr. Henry Taylor* and *Dr. E. Stanton Fetcher*.

Experiments completed or in progress:

1. Experiment FA. Serum cholesterol in cretins. Among the male patients five cretins were discovered. Two had never been treated with thyroid and their serum cholesterol levels were found to be about 250 mg/100 ml, similar to normal American males of the same age. Three were receiving thyroid and their cholesterol levels ranged from 120 to 220. Upon withdrawal of the thyroid for 4 weeks the cholesterol levels increased by about 100 mg/100 ml in all 3 individuals. This response was a good confirmation of the intimate relationship between thyroid activity and serum cholesterol level. Portions of food equal to those consumed by each man were collected for a seven day interval in each treatment period and the food composites were analyzed. In the future it will be possible to alter the amount of fat and type of fat in the diet of these patients in order to find out whether dietary shifts have the same effect in cretins as in normal men.

Dr. Vail  
May 7, 1964  
Page 2

2. Experiment FB. A study of blood lipids in men eating diets containing 4 different mixtures of fats and carbohydrates. Each of these mixtures is intended to have the same effect on serum cholesterol level. The hypotheses being tested are that dietary carbohydrate and mono\* unsaturated fatty acid have no cholesterol altering tendency and that each gram of dietary saturated fatty acids can be neutralized by 2 grams of polyunsaturated fatty acids.
3. Experiment FC. A comparison done in a similar way between hydrogenated fat such as is used in commercial margarines and a matching fat. The only difference between the two fats is the presence of unnatural isomeric fatty acids formed in the process of hydrogenation. The hypothesis being tested is that the trans mono-unsaturated fatty acids formed in the process of hydrogenation cause an elevation of serum cholesterol level.

Experiments planned:

Experiment FD. Measurement of the cholesterol raising effect of a coconut oil cocoa butter mixture. In a previous experiment using a vegetarian basic diet the addition of this mixture of saturated fats produced a rise in serum cholesterol level which was only half as large as expected. The present experiment is intended to determine the serum cholesterol response when this fat mixture is added to a basic diet of the usual American type (containing meat and dairy products).

After July 7 we will stop work at Grandvlew because the patients are to be transferred into another building. We plan to set up a feeding unit in the Springdale building and continue a similar program. For the first year we plan to cooperate with Dr. Ivan Frantz by including in the protocol a subject of scientific interest to him and also by including about 40 of the patients who meet his criteria and have been on his diet during the last year. All of the 75 patients living at Springdale will be given the special diets\* The food preparation and service will be done by University employees thus reducing the staff required as far as the State School is concerned by one position\*

*Dr. Frantz'* research objective with this group is to determine the effect of adding the cholesterol contained in 2 eggs daily\* Our objective is to determine whether a long term (20 weeks) dietary treatment with butter or with partially hydrogenated corn oil has a different effect from that obtained in the usual periods of 3 or 4 weeks. Both objectives can be attained by an integrated program lasting 40 weeks.

Dr. Vail  
May 7, 1964  
Page 3

After May 1965, Dr. Franks intends to stop feeding programs at Faribault but we would like to continue for several years. There are many unanswered questions about the effects of diet on blood lipids which are of practical importance. The patients at Springdale are particularly good subjects for metabolic studies because they are physically rather healthy and active. We feel that the cooperation between the Department of Public Welfare and the University which makes this unusual research possible is socially valuable and should be continued,

Finally, we are planning that the expenses of moving and of alterations required for setting up the metabolic unit in Springdale will be paid by research funds either from Dr. Frantz' grant or from ours.

Sincerely,

Joseph T. Anderson, Ph. D,  
Professor

JTA;km