

Our Findings with Fish

Task 1. **Fish Research.** Extend prior experimental test tube evidence by using live models (rainbow trout) to determine the effect on cancer resistance of those parameters that were found to increase an essential fatty acid dependent detoxifying enzyme (alkyl:peroxide oxido reductase) in the in-vitro activity. Some of the factors that in reasonable physiological concentrations increased this ratio were ascorbic acid and alpha tocopherol. Retinol acetate to a much lessor extend had a similar effect. However because of other evidence both retinol esters and retinoic acid are being included along with ascorbic acid and alpha tocopherol in this phase of the of our research. The same queries and tests are to be extended to other types of cancer.

Current Tasks of HEAL Research

OVERVIEW

The experimental design is based on evidence that certain natural products may reduce cancer susceptibility by increasing the activity of an essential fatty acid dependent detoxifying **enzyme (alkyl:peroxide oxido reductase)**.

Several of these substances are being fed in a matrix of 34 different diets in as many fish groups. The fish will be observed by sacrificing about 5 % of each group on a regular basis extending over about 9 months.

Research Results and Status as of December 2001

The experimental regimen that was started on June 12 had three levels of Vitamins A, C and E and two levels of vitamin A metabolites, all trans retinoic acid and 9 cis retinoic acid. There were 18 different diet groups.

By mid-September examination showed liver abnormalities in all groups having increased alpha tocopheryl-acetate in their diets.

Because of this, extra diet groups were started on October 9 to determine whether the liver abnormality was due to feeding of the alpha tocopheryl-acetate as such, or if an impurity in the alpha tocopherol had toxic properties. Mixed tocopherol analogues with emphasis on gamma tocopherol are being compared to the alpha form in the diet.

An outside laboratory is analyzing the vitamin E content of the blood sera from fish on these diets.