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Howard Brown

L. W. Tuttle

JULY PROGRESS REPORT - MEDICAL BRANCH

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Investigators at the University of California at Los Angeles project have recently made a very fundamental discovery concerning the mechanism by which ionizing radiation damages biological systems. It is well known that dosages of radiation which exert profound effects upon living organisms have almost undetectable action on most pure chemical substances. For this reason the finding that a substance which is widespread in most organisms and which multiplies the effects of radiation constitutes a significant advance in the field. The investigators found that the polyunsaturated essential fatty acids which are intimately concerned with growth and new cell formation, when irradiated undergo a shift of the isolated double bonds into conjugated positions. This bond shift is a measure of free radical and consequent peroxide formation in the acids molecules. Appropriate calculations showed that this phenomenon takes place with an ionic yield of 18 which is very high and shows that a chain reaction similar to auto-oxidation must be taking place. Further experiments are underway toward determining the nature of the reaction and its products and a determination of the effects of these irradiated products upon living systems. Information of this nature is of vital importance in determining the possible hazards involved in the possibility to sterilize food products by the use of irradiation from fission products. Related fundamental studies on the influence of ionizing radiation upon pure organic metabolites and the effect of these radiation altered metabolites upon living systems has recently been initiated at Reed College, Portland, Oregon; University of California at Berkeley and the University of Michigan at Ann Arbor. The objective of these studies is to provide basic information concerning the safety or non-safety of the consumption of highly irradiated food products prior to the time that the technologic feasibility of using fission products to sterilize foods is established.

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BIOMEDICAL PROGRAMS IN WEAPONS TESTS

By Commission action the Division of Biology and Medicine has been given responsibility for the "coordination and screening of proposals from all agencies for biomedical experiments and civil defense programs as well as similar proposals from within the AEC organization. Recommended proposals will be referred to the Manager, SFO, through the Division of Military Applications for comment on feasibility. Acceptable and feasibility proposals of minor scope will be incorporated into the test program. Proposals of major scope or importance which significantly effect current planning will be referred to the Commission (and other agencies as necessary) for consideration and decision." The Division has coordinated and recommended a limited scope biomedical program proposed by the Armed Forces Special Weapons program for incorporation

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