

TECHNICAL SECTION

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**Agricultural
and Food
Chemistry**

- Biochemical Engineering
- Fermentation
- Food Processing
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- Plant Nutrients and Regulators

Schradan Activity Modified and Chemical Agents Measured

• In the interest of learning why the toxicity of schradan is much higher in mammals and certain insects than might be expected from its *in vitro* anticholinesterase activity, Spencer and O'Brien have given attention to the speculation on *in vivo* conversion to a more active compound. Schradan was chlorinated to learn if the introduction of electrophilic groups would activate the molecule and increase its cholinesterase activity. The anticholinesterase activity was increased to such an extent that the monochlorinated derivative had an activity more than 10,000 times that of schradan. The degree of hydrolysis was increased to such an extent that derivatives containing two or more chlorine atoms were so reactive toward water as to show little anticholinesterase activity. Formaldehyde was a hydrolysis product. This paralleled the decomposition of the naturally produced active material. • A major difficulty in the testing of emulsions of agricultural chemicals is in preparation of the emulsion in such a way as to assure reproducibility of tests. As there is a dearth of data on the effects to be expected from variations encountered in this operation, Behrens and Griffin have produced such data related to mode of addition of ingredients, agitation, and other preparation conditions. A test method using commercially available equipment has been devised. It was found that depth of the emulsion and the shape and size of the container produced effects on creaming rate, indicating importance of standardization. The same was shown for regulation of agitation. • A procedure used effectively to determine the quantity of trichloroacetic acid in fresh plant tissues has been worked out by Tibbitts and Holm. The acid is separated and the amount recovered is estimated colorimetrically. The plant tissue is homogenized with acetic acid and fat-soluble pigments and insoluble cellular components separated by filtration. Accumulation of quantities of trichloroacetic acid as small as 25 micrograms per gram of fresh tissue can be extracted and measured satisfactorily.

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Food Stabilized by Glucose Conversion: Frozen Foods Nutrition Research Planned

• Scott has studied the glucose oxidase-catalase system used to convert glucose to gluconic acid rendering the glucose nonreactive with respect to the Maillard reaction. Empirical relationships have been developed to relate the glucose level, time, enzyme level, and hydrogen peroxide level. The methods described offer an improvement in efficiency of utilization of enzyme and peroxide. The work reported was done with the preparation of albumen solids and also with egg yolk and whole egg with suggestion that it is applicable to other products as well. • There is a scarcity of data dealing with the occurrence of nutrients in fruits, juices, and vegetables after preservation by freezing followed by subsequent storage and/or cooking. As a service to improve this situation and provide a supply of dependable data, the National Association of Frozen Food Packers is sponsoring a five-year nutrition research program to determine nutritional values on samples drawn from more than 30,000 packages of frozen foods. Schmitt and Jessen present the sampling plan which will be used as the basis for the program. Papers reporting results of the laboratory studies will follow.

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