Barton S. Clark, scientific director of American Can and outgoing IFT president, congratulates Philip K. Bates, general manager of research for Carnation Co., who assumed the duties of president at the meeting

Acetoglyceride Fat Products of Potential Value to Food Industry

LOS ANGELES.—New fat and oil products having unique and potentially valuable properties can be produced by substituting in effect acetic acid for a portion of the fatty acids occurring in ordinary fats and oils so as to obtain predominantly either diacetotriglycerides or monoacetodiglycerides, R. O. Feuge, Southern Utilization Research Branch, USDA, reported at the 14th annual meeting of the Institute of Food Technologists here.

Feuge called the compounds, or combinations of them, acetoglycerides. They can be made by the catalyzed interesterification of a fat or oil with triacetin, either with or without addition of free glycerol, and two methods for producing them were described.

Some of the products, unlike ordinary plastic fats, can be simultaneously nongreasy and plastic over the temperature range of about 0° to 45° C. Others can resemble ordinary edible oils and yet have melting points as low as −20° C. and be more resistant to oxidation and polymerization. The unique properties are attributed to the peculiar crystallizing habits of the compounds.

Feuge compared tristearin and 1,3-distearin (ordinary glycerides) with the related acetostearins, namely 1,2-diaceto-3-stearin and 1-aceto-3-stearin. The first compounds, under rapid cooling, solidify in alpha polymeric form and then revert to the stable beta form. Both are opaque, hard, brittle solids. The acetostearins, on the other hand, produce the alpha form which is quite stable and, importantly, quite waxy. The acetostearins will remain waxy for years when kept at room temperatures. When cooled below 0° C., the alpha form transforms to sub-alpha form, which is also waxy. It is these two waxy forms of the acetostearins and other acetoglycerides which have many potential uses, Feuge said.

The acetoglycerides have not been approved as yet for edible foods but investigations are under way in this direction. Potential uses for higher melting compounds include protective coatings for processed meats and other food products. Lower-melting compounds are useful when a low-melting fat resistant to oxidation and rancidity is required. Aceto-olein products are being investigated as a special margarine-like spread desired by the Armed Forces. The product has a long plastic range and it is indicated that it is acceptable after storage for six months at 100° F. Both aceto-olein and acetostearin products are possible plasticizers for certain polymers or plastics, Feuge reported.

Wine Research. It has often been noticed that young white wines vary greatly in rate and degree of natural clarification and certain wines require much larger amounts of fining agents than others to obtain the same degree of clarity and colloidal stability. Of a number of constituents analyzed, nitrogen content alone showed significant correlation with stability, according to A. Tchelistcheff, D. Tchelistcheff, and J. E. Heitz, Beaulieu Vineyards.

Addition of pectic enzymes substantially reduced nitrogen content and increased the stability of resultant wines, but use of these enzymes is not unconditionally recommended because they have sometimes caused increased browning.

An enzyme preparation of glucose oxidase and catalase has been used to stabilize apple wine by the removal of oxygen after completion of fermentation, according to H. Y. Yang, Oregon State College. The method has certain advantages over pasteurization or addition of sulfur dioxide which has been general practice in stabilizing apple wine. Pasteurization sometimes causes a burnt taste in the wine, and sulfur dioxide causes a pungent taste and loses its effectiveness as a preservative when it is combined with other compounds.

Unpasteurized and unsulfured wine with a pH of 3.6 and alcohol content of 12% by volume was used in the work. Stability was measured by the volatile acid development. The tests showed that volatile acid development was retarded with an enzyme content of 0.10% while further development was stopped by a content of 0.15%. Discoloration was so slight that it showed no appreciable difference from the natural browning of untreated wine and no objectionable flavors were observed.

Tomato Juice Film. The tomato processing industry has long been plagued by problems of tomato film deposition on heat exchanger surfaces. The problem is extremely serious when high-temperature, broken tomato pulp is heated or concentrated. H. W. Adams and coworkers at University of Illinois have found that addition of polygalacturonase prevented film deposition in recent tests.

In a 7-gallon evaporator, both polygalacturonase and pectin esterase were added to juice and allowed to stand for definite period at room temperature, then the enzymatic treated juice evaporated. Pectin esterase did not prevent film deposition. While 0.5% polygalacturonase at less than 15 minutes standing did not break down the pectin molecule sufficiently to inhibit film deposition, 0.5% at two hours seemed to be minimum time necessary for enzymatic action to prevent deposition. Viscosity was reduced by use of both the 0.5 and 0.1% concentrations. High pressure steam injection prior to evaporation of the juice also prevented "burn on."