The Outlook for Nonsugar Sweeteners*

By
Roy A. Ballinger

By far the most important development concerning nonsugar sweeteners in 1969 was the issuance of new regulations concerning the use of cyclamate by the Food and Drug Administration. Without going into the details of the new regulations, which have been modified two or three times since their first appearance in October, I will merely observe that their most important feature is to forbid their use in beverages and certain food products. Also labeling requirements have been made more stringent. However, it is still possible to purchase cyclamates without having a doctor's prescription.

I presume that the principal interest of this group in these regulations concerns their probable effect on the consumption of sugar and perhaps other sweeteners. It is difficult to measure these effects with much accuracy, although the direction of the effect, in most cases, is obvious.

Estimates of additional sugar consumption in the United States in 1970 resulting from these regulations, have ranged from 100,000 to 150,000 tons. The larger of these figures is about 1.4 percent of expected sugar consumption in the United States this year. Of course, the decline in the use of cyclamate probably will be equivalent in sweetness to more than 150,000 tons of sugar. Previous research has indicated that only about one-third the combined consumption of saccharin and cyclamate, much of it used in mixtures, was a substitute for sugar. The remainder enlarged the size of the sweetener market.

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The regulations concerning the use of saccharin mixed with sugar have been changed somewhat and the Food and Drug Administration has announced that investigations of its safety will be made. It seems certain that part of the reduced consumption of cyclamate will be replaced by saccharin unless saccharin is also declared unsafe. Soft drinks sweetened with a mixture of sugar and saccharin must provide for a 50 percent or greater reduction in caloric content and carry a special label. Whether the use of such mixtures will also encourage the use of sugar is doubtful. The saccharin may merely replace sugar.

An immediate effect of the new restrictions on the use of cyclamates was to greatly increase the demand for ammoniated glycyrrhizin, a product obtained from licorice root. Shortly after the first announcement of restrictions on the use of cyclamates MacAndrews and Forbes, producer of ammoniated glycyrrhizin, reported a twenty-fold increase in demand for the product. Data showing the exact quantities involved are not available, but consumption apparently was so small that even a twenty-fold increase would be insignificant so far as the sugar market is concerned. However, the sharp increase in sales of the product does indicate the presence of a demand for noncaloric sweeteners.

Also interest in the commercial possibilities of new noncaloric substances which have been discovered but have not been approved by the Food and Drug Administration for use in foods and beverages has been greatly stimulated by the new cyclamate regulations. These substances include the dihydrochalcones discovered by the ARS, USDA and aspartyl-

phenylalanine methel ester discovered by G. D. Searle and Company. The commercial fate of these substances, and others that are likely to appear, is unknown. If approved for use either or both might become an important sweetener.

Another new sweetener, called polysweet, is, according to the manufacturer, soon to be offered for sale commercially. This is reported to consist of three amino acids, polyglycerol, and emulsified saccharin. It is also reported to be 5 or 6 times as sweet as sugar and to have only 10 percent as many calories. The amino acids are not essential for nutrition but do contribute calories. While this product certainly cannot be classed as a noncaloric sweetener, the reduction in calories, as compared with sugar is significant. If successful in the market place, it may compete with both sugar and the noncalorics.

Perhaps we might speculate for a moment on the probable effects of these changes on the sweetener market. It seems to me that within a few years the consumption of noncaloric and low-calorie sweeteners may become as large or larger than it was prior to the recent restrictive regulations concerning the use of cyclamates. The new sweeteners which now appear to be in the offing will provide us with a much wider variety of sweeteners than are now available. They are likely to compete with each other as much or more than with sugar. No doubt some sugar will be displaced from the market place, but, judging from past experience, the quantity displaced will amount to only a small fraction of total sugar sales. The rate of increase in sugar consumption in the United States will probably be slowed somewhat, and this may be the most that will happen.

This judgment, of course does not include any estimate of the effect of the competition of corn sirup and dextrose on sugar consumption. The newest item in this group of sweeteners is isomeric sirup. This sirup contains levulose and, in contrast to other corn sirups, is about as sweet as sugar. This product is much closer in most respects to sugar than are the noncaloric and low calorie sweeteners. Consequently it seems likely that the use of isomeric sirup is more likely to displace sugar than is true of the noncaloric sweetners. Of course, it is too soon to know how much commercial success isomeric sirup will have. At the present time it is little more than a potential competitor of sugar.