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Formulating cut lozenges

By Reg Groves

Preface
The following article is re-published from correspondence by Reg Groves, President, Groves & Company, that was originally printed in Candy Industry magazine as the "Confectionery Workshop" column. Permission from Groves & Company, and Candy Industry, has been granted to Pat Magee, P Magee Enterprises.

A recent reader's question concerned the manufacture of cut lozenges. The term "lozenge" is somewhat confusing because it does not refer to a specific type of candy. Products may be labeled "lozenges" that are made by the cut process, by compression or of hard candy or hard jelly gums.

The most common connotation of this name is that lozenges usually have a round shape and some benefit other than just taste – breath freshening, relief of a sore throat or clearing of the sinuses.

Cut lozenges are made from a dough that is basically powdered sugar mixed with an adhesive syrup, colored and flavored.

A typical formulation would be:

Powdered sugar (10X)	200 lbs.
Gum arabic (acacia)	8 lbs.
Water	9 lbs.
Gum tragacanth	8 oz.
Water	3 lbs.
Gelatin (150 bloom)	12 oz.
Hot water	3 lbs.
Corn syrup (regular 42/43)	17 lbs.
Corn starch	8 lbs.
Color and flavor as desired	

The gum arabic solution is prepared in advance and is used at room temperature. If gum arabic is the only adhesive used, the lozenges will be rather hard and brittle.

The gum tragacanth requires several hours of soaking to absorb its portion of water. This adhesive is tenacious and provides better strength than gum arabic alone.

Gelatin is stirred into its portion of hot water, just prior to use, to aid adhesion and provide flexibility.

The corn syrup is preferably warmed to aid dispersion. It contributes to adhesion, but also retains some moisture so that the lozenges are not hard and brittle.

Depending on the fineness of the sugar, more or less of the gum arabic solution may be needed.

Very fine sugar will have a larger surface area of particles to be wetted, and this will require more fluid. Conversely, a more coarse grade of sugar will need less adhesion solution.

The required texture is a soft, plastic paste that can be rolled into a thin sheet.

The double sigma-blade dough mixer is generally used. Normally, this need not be jacketed as mixing is at room temperature. Other efficient, heavy-duty mixers may be used.

The usual sequence is to place all of the sugar and starch into the mixer and than add the adhesives, color and flavor while mixing until a homogeneous mass is produced.

The next step is to form the shaped lozenges. The equipment that is normally used forms a continuous sheet of about 1/2-inch thickness by means of a horizontal multiple-screw extruder.

The sheet is then rolled down to the required thickness by passing through multiple pairs of horizontal rollers.

The sheet is heavily dusted with dry starch to prevent sticking to the rollers.

Next the sheet passes beneath a set of vertical cutters that stamp out the required shape as well as imprint a product name or company logo on the surface.

The shaped lozenges are delivered onto starch-dusted trays and the web is reworked through the extruder.

In the preceding formula the moisture content is approximately 7.5 percent.

The lozenges must be dried to between one and two percent moisture to make them hard.

The lozenges are spread in trays that have perforated bases to assist the removal of moisture. There should be a sufficient gap between the trays to permit free circulation of drying air.

The trays are held in rooms where the temperature and relative humidity are controlled to maximize the rate of drying.

Depending on formulation and thickness, drying may take days. Drying rooms should have fans to circulate air between the trays.

If drying is too rapid, a hard skin may form that will delay drying of the inside.

If the temperature is too high, the lozenges may expand and lose their flat appearance. At a high temperature, there may be much loss of volatile flavoring.

Typical drying room conditions will have a temperature of about 100-110 degrees F and a differential of about 25 percent between the equilibrium relative humidity of the product and relative humidity of the air.

There must be good air circulation, but not too much to blow starch from the trays. END