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Tablets, Lozenges and Extruded Paste

14.1 TABLETS

A tablet is a mixture of flavourings, lubricant, binding and base material which has been held under pressure so as to form a hard, cohesive confection which contains very little moisture. Tablets can be produced by wet granulation or by slugging procedures. Both methods are given below together with a basic recipe.

<table>
<thead>
<tr>
<th>TABLETS</th>
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<tbody>
<tr>
<td>Parts by weight</td>
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<tr>
<td>Icing Sugar</td>
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<tr>
<td>Stearic Acid</td>
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<tr>
<td>Isopropanol</td>
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<tr>
<td>Gelatine</td>
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<tr>
<td>Glucose Syrup</td>
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<tr>
<td>Water</td>
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<tr>
<td>Flavouring</td>
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Method: Wet Granulation

1. Dissolve the stearic acid in the isopropanol.
2. Dissolve the gelatine in the requisite amount of warm water and blend in the glucose syrup.
3. Place the icing sugar in the bowl of the mixer.
4. Add the liquid components and work into the batch.
5. Check that the mixture forms a ball when held in the hand.
6. If the mix is of a satisfactory consistency, granulate and pass through a suitable mesh (normally No. 6) to form a small granular mix (See Note 1).
7. Spread the crumbled dough on a tray and transfer to drying ovens.
8. Dry at 60° C (140° F) for 10 hours (See Note 2).
9. Transfer to a tumbler mixer and add the lubricant and flavouring. Mix.
10. Transfer to the tableting units and compress to shape.

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Notes: (1) This can be carried out in oscillating extrusion or reciprocating granulators with large mesh sieves or in hammer mills. (2) Fluid air bed drying can be used at this stage to reduce drying time to 30 minutes.

14.2 SLUGGING

The use of a precompression stage to form free flowing granules called slugging is the preferred method when the mix contains components which are likely to pick up moisture from the atmosphere or when volatile components have to be added.

Method: Slugging
1. Prepare the dry mix as before and work in the binder solution.
2. Transfer to the tabletting unit and compress into large tablets.
3. Break the tablets into granules of fairly uniform size.
4. Dry.
5. Add additional lubricant and compress to final tablet shape.

The granules should be less than one-tenth the size of the final tablet size [A. C. C. Newman, A. Axon, SCI Symposium, Sept. 1960]. In both methods it is essential to produce powders which flow evenly into the compression dies. A starch hydrolyzate has recently become available which consists of 92% dextrose and 8% glucose syrup in granular form. This material takes up flavouring and colouring and is highly suited for tablet manufacture. The presence of too great a quantity of fine material in powder at this stage can give an abrasive mixture which will be detrimental to the manufacturing plant. This ‘fine’ material can result in a greater amount of air being entrapped in the tablet. There is always some air present within the tablets when sugar is used in the recipe. According to T. Higuchi et al. [J. Amer. Pharm. Assoc., 1952, 43, 245] this entrapped air can range from 2–10% of the tablet volume. Incorporated air effects the speed of disintegration of the tablet. The presence of some fines can therefore be desirable but excessive quantities can lead to problems during manufacture.

14.3 TABLET COMPOSITION

Tablets will harden with age if the major base material in the recipe is icing sugar. Hardening also occurs with certain binding materials, particularly when gums such as gum acacia are the sole binder. Dextrose, which produces a tablet which has a pleasant cooling effect on the tongue, and lactose, can be used as alternative base materials. It is then essential to include a binder such as gelatine of the highest grade—at least 200 Bloom strength, preferably 230, food grade, added to the recipe at a rate of 2% of the final batch weight. Disintegration times of tablets are always