

The disadvantages of powdered and granulated dosage forms are as follows:

1. Bulk powders or granules (i.e. where doses are not pre-divided into individual aliquots) are far less convenient for the patient to carry than a small container of tablets or capsules, and are as inconvenient to self-administer as liquid preparations, such as mixtures. Modern packaging methods for divided preparations, such as heat-sealable laminated sachets (Chapter 47), mean that individual doses can be carried conveniently.
2. The masking of unpleasant tastes may be a problem with this type of preparation. A method of attempting taste-masking is by formulating the powder into a pleasantly tasting or taste-masked effervescent product. However, the manufacture of tablets and capsules is a more appropriate alternative for low-dose products.
3. Bulk powders or bulk granules are not suitable for the administration of potent drugs with a low dose. This is because individual doses are extracted from the bulk using a 5 mL spoon. This method is subject to such variables as variation in spoon fill (e.g. 'level' or 'heaped' spoonfuls) and variation in the bulk density of different batches of a powder. It is therefore not an accurate method of measurement. Divided preparations have been used for more potent drugs, but tablets and capsules have largely replaced them for this purpose.
4. Powders and granules are not a suitable method for the administration of drugs which are inactivated in, or cause damage to, the stomach; these should be presented as enteric-coated tablets, for example.

Powders and granules for oral administration

Oral powders

Oral powders are preparations consisting of solid, loose, dry particles of varying degrees of fine particle size. They contain one or more active substances, with or without excipients and, if necessary, approved colouring matter and flavouring. They are generally administered in or with water or another suitable liquid, or they may also be swallowed

directly. They are presented as single-dose or multi-dose preparations in suitable containers.

Multidose oral powders are packed into a suitable bulk container, such as a wide-mouthed glass jar. They require the provision of a measuring device capable of delivering the quantity prescribed. Because of the difficulty in precisely measuring single doses from this type of preparation the constituents are usually relatively non-toxic medications with a large dose. Relatively few proprietary examples exist, although many dietary/food supplements are packed in this way.

Each dose of a single-dose powder is enclosed in an individual container, for example a sachet or a vial. Traditionally, single doses were wrapped in paper. This was unsatisfactory for most products, particularly if the ingredients were hygroscopic, volatile or deliquescent. Modern packaging materials of foil and plastic laminates have replaced such paper wrappings; they offer superior protective qualities and are amenable to use on high-speed packing machines. However, some paper-wrapped powders continue in over-the-counter products.

In the manufacture of oral powders, effort is made to ensure a suitable particle size is used with regard to the intended use. Additionally during manufacture, packaging, storage and distribution of oral powders, suitable means must be taken to ensure microbial quality. All powders and granules should be stored in a dry place to prevent deterioration due to ingress of moisture. Even if hydrolytic decomposition of ingredients does not occur, the particles will adhere and cake, producing an inelegant, often unusable product.

Effervescent powders

Effervescent powders are presented as single-dose or multidose preparations and generally, in addition to the drug, contain acid substances and carbonates or hydrogen carbonates which react rapidly and effervesce when the patient adds the powder to water to produce a draught. Citric acid plus sodium bicarbonate is a common combination that releases carbon dioxide. The drug is quickly dissolved or dispersed in the water before administration.

It is preferred that effervescent powders are packed in individual dose units in airtight containers (laminated sachets are ideal, Chapter 47). It is important to protect the powder from the ingress of moisture during manufacture and on subsequent storage to prevent the reaction occurring prematurely.