

## *Chapter 1*

# **Introduction**

The confectionery industry divides confectionery into three classes: chocolate confectionery, flour confectionery and sugar confectionery. Chocolate confectionery is obviously things made out of chocolate. Flour confectionery covers items made out of flour. Traditionally, and confusingly, this covers both long life products, such as biscuits, in addition to short-life bakery products. Sugar confectionery covers the rest of confectionery. In spite of the above definition, liquorice, which does contain flour, is considered to be sugar confectionery. The confectionery industry has created many confectionery products that are a mixture of categories, *e.g.* a flour or sugar confectionery centre that is covered with chocolate. There is another category that is sometimes referred to as 'sugar-free sugar confectionery'. This oxymoron refers to products that resemble sugar confectionery products but which are made without any sugars. The usual reason for making these products is to satisfy special dietary needs. A better name might be 'sugar confectionery analogues'.

The manufacture of confectionery is not a science-based industry. Confectionery products have traditionally been created by skilled craftsman confectioners working empirically, and scientific understanding of confectionery products has been acquired retroactively. Historically, sugar confectionery does have a link with one of the science-based industries – pharmaceuticals. In the eighteenth century, sugar confectionery products were made by pharmacists as pleasant products because the active pharmaceutical products were unpleasant. The two industries continue to share some technology, such as making sugar tablets and applying panned sugar coatings. There are products that although apparently confectionery are legally medicines. This usually applies to cough sweets and similar products. In the United Kingdom these products are regulated under the Medicines Act and require a product licence. This means that all the ingredients for the product are specified and cannot easily be altered. The dividing line between confectionery and medicines is not uniform in all countries.

One reason that confectionery making is not a science-based industry is the very long product life. The Rowntree's fruit pastille was invented in 1879 and was first marketed in 1881. This product is still one of the leading sugar confectionery lines in the UK today (1999), and it appears that it will continue to be sold into the 21st century. The man who invented it, Claud August Galet, knew nothing of proteins or the peptide bond. In 1879 very little was known about proteins in scientific circles so there was no scientific basis from which to work.

## FOOD LAW

Legislation affects all parts of the food industry. In Great Britain, modern food law developed from the Food and Drugs Acts. Such legislation came about after an outbreak of arsenic poisoning among beer drinkers, the cause of which turned out to be the glucose that had been used in making the beer – the glucose had been prepared by hydrolysing starch with sulfuric acid. The acid had been made by the lead chamber process from iron pyrites which contained arsenic as an impurity. The approach subsequently adopted was that all foods should be 'of the substance and quality demanded'. This was obviously intended to cover any future problems with other contamination, and not necessarily with arsenic. Other countries, particularly those whose legal systems follow Roman rather than Anglo-Saxon law, have tended to more prescriptive laws.

The British approach is to allow any ingredient that is not poisonous unless, of course, the ingredient is banned. Additives are regulated by a positive list approach: unless the substance is on the permitted list it cannot be used. There are anomalies where a substance can be legal in foods but which is not permitted to be described in a particular way. An example of this is the substance glycherrzin, which is naturally present in liquorice and has a sweet flavour. It would be illegal to describe it as a sweetener as it is not on the permitted sweetener list. Glycherrzin is permitted as a flavouring, however, and can be added to a food, which makes the overall product taste sweeter than it would without the addition. Conversely, the protein thaumatin is permitted as an intense sweetener yet, in practice, it has been found that thaumatin has more potential as a flavouring agent. It would have been much easier and cheaper to obtain approval for thaumatin as a flavouring rather than as a sweetener.

The British system does not automatically give approval to new ingredients merely because they are natural. This is in contrast with the position in some other countries – there will always be grey areas. One example is the position of the oligo-fructose polymers which are naturally present in chicory. Chicory is undoubtedly a traditional food

ingredient; however, the oligo-fructoses extracted from it cannot necessarily be described as such. If the fructose polymers are hydrolysed to fructose then that is a permitted food ingredient. However, if they are partially hydrolysed then what is the status of the resulting product? The issue of fructose polymers is further complicated because one of the properties that is interesting is that they might not be completely metabolised. If that is the case then they would be considered as additives rather than ingredients. Additives need specific approval whereas ingredients do not.

Unlike chocolate confectionery, sugar confectionery is free of legal definitions. Terms such as 'pastille' or 'lozenge' although they have an understood meaning, at least to those in the trade, are sometimes applied to products that are not strictly within that understood meaning, *e.g.* there are products that are sold as pastilles but which are, in fact, boiled sweets. Butterscotch must contain butter, but gums do not have to contain any gum.

## THE SCOPE OF SUGAR CONFECTIONERY

The confectionery industry is vast. It ranges from small shops, where the product is made on the premises, to branches of the largest companies in the food industry. Probably because sugar confectionery keeps well without refrigeration it has been a global market for many years. In spite of this there are distinct national and local tastes in sugar confectionery. A British jelly baby may resemble a German Gummi bear but the taste is quite different – curiously, the British jelly baby was invented by an Austrian confectioner. Similarly, the gum and gelatine pastilles made in France and Britain are very different, yet the leading British brand was invented by a French confectioner.

## HEALTH AND SAFETY

Sugar confectionery is not an inherently dangerous product but several points should be made. Some sugar confectionery products are made at high temperatures, *e.g.* 150 °C, which is hotter than most forms of cookery even if it is not a high temperature by chemical standards. Precautions must also be taken to prevent contact between people and hot equipment or products. Sugar-containing syrups not only have a high boiling point but they are by nature sticky and a splash will tend to adhere. Precautions must be taken to prevent splashes and also to deal with any that occur. In the event of a splash, either plunging the afflicted area into cold water or holding it under cold running water is the best first aid. A sensible precaution is to make sure that either running water or a suitable container of water is always available.

Most sugar confectionery ingredients are not at high risk of bacterial contamination. However, some ingredients are prone to bacterial problems; examples are egg albumen and some of the gums and gelling agents. In handling these materials, precautions need to be taken so that they do not contaminate other ingredients or any finished product. Confectionery ingredients should be food grade and any confectionery being made to be eaten should be prepared using food grade equipment and not in a chemical laboratory. It must also be ensured that dusts from handling the ingredients do not cause eye or lung irritations. Some confectionery ingredients, although perfectly edible and of good food grade, can cause irritation if inhaled.