

Food Production

In order to meet an ever-increasing demand, the production, preservation and storage of food has changed considerably over the past decades.

It is very common to find food from all around the world in our local shops and supermarkets. The produce has to travel long distances from where it has grown to reach our shops. It is either transported quickly and efficiently at great cost, before the produce spoils, or it has to be preserved in some way so that the time elapsed from harvesting to the dinner table is less critical.

The preservation and processing of food is not entirely a new invention. Methods such as pickling and drying, for instance, have been in use for hundreds of years, as has the refinement of foods such as flour and sugar.

In more recent times it seems that other foods are being refined for a number of reasons. For instance, fruit juice is processed to remove excess sediment, to make it more appealing to the consumer. In addition compounds that have a bitter taste may be removed in order to increase sweetness. One could ask why the processors do not simply add sugar in order to make the end product sweeter, but there lies another issue. Government health guidelines restrict or forbid the addition of sugar because it is a promoter of tooth decay, so if sweetness is to be achieved, it is done by removing the bitter phytoalexins. Unfortunately, health-promoting phytoalexins often have a sharp or bitter taste and therefore are often targeted for removal in the quest for sweeter drinks.

IN SUMMARY

To cope with high the demand for food, a lot of fruit and vegetables are tinned or preserved in other ways

Food may be altered during this process, to give consistency and to make it more appealing for the consumer

The refining, canning and bottling processes may remove important phytoalexins from the produce

Our changing tastes in food

The cross-breeding of fruits and vegetables has been developed over a number of centuries and is an ongoing process. Most recently, the motives have been focused on generating revenues by changing the size, shape, and colour of produce in order to increase its visual appeal to the consumer. Another important reason was to improve the flavour of produce, usually by making it sweeter. This was achieved by breeding varieties of fruits or vegetables that were more uniform in size and with a less bitter taste. In late 2007 a grower claimed to have produced a variety of Brussels sprout with a sweet taste, in the hope that children might be persuaded to like them! In the case of fruit juices, producers have developed processes such as ion exchange techniques that remove the bitter tasting components from the end product. A good example of this is cranberry juice. Anyone who has experienced the eye watering bitterness of organic cranberry juice will recognize that its supermarket offering of the same name has a completely different, sweet flavour.

Unfortunately, many of the health promoting phytoalexins (for example nobiletin) that are naturally produced by the plant have a bitter taste. These compounds have been deliberately bred out of certain fruit and vegetables or chemically removed in processing prior to consumption. The result is the appearance of varieties that are not as rich in phyto-nutrients as their older counterparts, or processed foods and juices that have been stripped of the same important nutrients.

As phytoalexins are thought to contribute to the maintenance of good health, it can be argued that their disappearance from the modern diet may be one of the reasons why the incidence of certain conditions, that they help protect against, are on the increase.

IN SUMMARY

In order to offer produce that has a more appealing taste, farmers are growing less bitter varieties of crops and manufacturers are removing the bitterness from the produce

Some phytoalexins are naturally bitter so are being removed by this quest for sweeter produce



Appearance and taste versus nutrition, quantity versus quality

There can be few who would argue that there have been enormous changes in the way food is presented in the shops and supermarkets. Some arise as a result of changes in legislation, labeling and packaging being two that spring to mind. Most recently we have seen the introduction of a traffic light system to advise consumers of some ingredients that may not be beneficial to human health. These changes seek to inform the consumers in order that they can make choices appropriate to their own needs. However there are other practices reported, such as the injection of meat with water or colouring, that add nothing to the quality of the produce. They simply seek to make the appearance more appealing in order to sell more products. At the same time we hear reports of farmers having to discard large quantities of produce because it does not conform to the size, shape and look criteria set by the supermarkets. Much of this produce goes to waste and contributes to the higher cost of the food that does pass the tests.

There are those who believe that there is no difference between organic and conventionally grown produce, and others who point out that if everyone wanted to buy organic, there simply would not be enough food to feed the world. Faced with the second problem, their solution is to accept the status quo. There are plenty of scientific studies already published that demonstrate that the phytoalexin levels in organic produce are higher than in conventionally grown produce. The mineral and vitamin content may be comparable but they are only a small proportion of what is good about the consumption of fruit and vegetables. How can a consumer judge the quality of produce? Perversely the more perfect it looks, the less likely it is to contain high levels of the phytoalexins that are important to human health. Waitrose have recently started to sell produce that may look less attractive, but in fact may be a healthier option. Given that the phytoalexins are at their highest levels in plants that have been subject to stress or pathogens, perhaps the good looking fruit is not what it appears.



Guide for shoppers

Remember that many of these important phytoalexins have one thing in common. They taste bitter. Bitter is definitely better. The older varieties of apples (pre 1940) tend to have a sharper taste than their modern counterparts, so they are likely to be a healthier choice.

Appearance is no guide to nutrition levels. The better it looks, the worse it may be.

Processed foods may well have been engineered to taste better/sweeter by removal of bitter tasting compounds in the original produce. Restrict your intake of these kinds of foods.

Stick to whole foods wherever possible, and remember to eat the skin of the produce, where practical, if it has one. Some of the more important phytoalexins are to be found in the skins of fruit. Where else would you expect them to be? Pathogens attack from the outside.

Buy organic wherever possible. It really is worth the difference. Avoid produce that may have been sprayed with agro-chemicals.

Useful links

Apples www.orangeippin.com/

Oranges www.recipes4us.co.uk