Division of Food Science and Technology
Fact Sheet

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Greening of potatoes

CSIRO
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Why do potatoes turn green?

The role of a potato tuber for the potato plant is to produce the next generation of potatoes. It therefore contains nutrients in the form of starches, sugars, proteins and minerals for the new potato plant. When a potato tuber is exposed to light it turns green by producing chlorophyll and then can make extra energy for the new plant through photosynthesis. The green patches act in the same way as leaves do.

The potato plant also has the interesting ability to produce its own protective chemicals which can make it lethal to insects, animals and fungi which attack it. These protective chemicals (glycoalkaloids) are at high levels in the leaves, stems and sprouts of the potato plant and are normally at very low levels in potato tubers. However on exposure to light the potato tuber will produce elevated levels of these protective glycoalkaloids, with the highest levels being in the sprouts as they emerge from the tuber.

Potatoes will also produce high levels of glycoalkaloids (such as solanine) in response to bruising, cutting and other forms of physical damage, as well as to rotting caused by fungi or bacteria. In these instances high levels of glycoalkaloids are present in the potato. However in non-damaged potatoes, greening is a warning sign.

Are green potatoes safe to eat?

Green potatoes may cause food poisoning and since some of the symptoms are similar to gastro-enteritis it is possible that some undiagnosed cases of gastro-enteritis have been caused by eating green potatoes.

Human and livestock deaths have been recorded as a result of the consumption of greened or damaged potatoes with very high glycoalkaloid levels. It should be noted that glycoalkaloids are not destroyed by cooking processes, even by frying in hot oil. Consequently potatoes with pronounced greening or with signs of damage should not be eaten.

It is advisable that green or damaged potatoes are avoided by pregnant women or women who are likely to become pregnant, as there is some evidence of possible foetal damage or loss of the foetus from glycoalkaloid poisoning in animals.

Buying potatoes

New potatoes do not keep as well as older potatoes. As they are not fully matured they have a higher moisture content and thin skins which are easily damaged. They should be bought in quantities that can be consumed promptly.

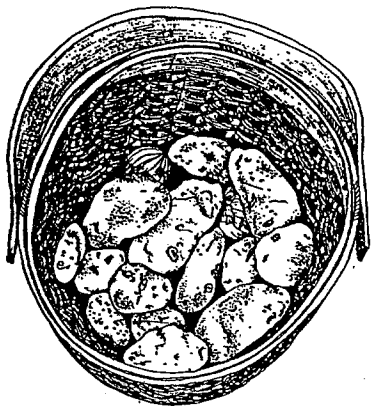
Thick-skinned **older** potatoes do not tend to green as rapidly as new potatoes and are therefore suitable when longer storage periods are used.

Care should be exercised when buying **red** skinned potatoes such as Pontiacs because any greening that has occurred may be camouflaged underneath the red colour at the top of the skin.

Storage of potatoes in the home

Potatoes should be removed from plastic bags and stored in brown paper bags or in trays in a cool dark place such as the bottom of a cupboard. Try to place them so that air can circulate around them.

Refrigeration of potatoes is not recommended because they are sensitive to chilling. At normal refrigeration temperatures (2°-6°), the starches they contain are converted to produce high levels of sugar. These sugars will cause the potatoes to turn brown very quickly when fried.



Conclusions

Not every potato with traces of greening will contain sufficient levels of glycoalkaloids to pose a threat to health. However because of the possibility that green potatoes may produce food poisoning, they should be discarded, as should physically damaged potatoes and those with any signs of rotting.

Consumers should avoid buying any potatoes that show signs of greening or damage and should carefully remove any sprouts before cooking. **However it should be remembered that healthy potatoes do not pose any health risk at all and are an excellent source of nutrients.**