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Anti-Cancer boost from whole carrots

By Sharon Barbour
BBC News

The anti-cancer properties of carrots are more potent if the vegetable is not cut up before cooking, research shows.

Scientists found "boiled before cut" carrots contained 25% more of the anti-cancer compound falcarinol than those chopped up first.

Experiments on rats fed falcarinol have shown they develop fewer tumours.

The Newcastle University study will be presented at NutrEvent, a conference on nutrition and health, to be held in France.

Lead researcher Dr Kirsten Brandt, from Newcastle University's School of Agriculture, Food and Rural Development, said: "Chopping up your carrots increases the surface area so more of the nutrients leach out into the water while they are cooked.

"By keeping them whole and chopping them up afterwards you are locking in nutrients and the taste, so the carrot is better for you all round."

The Newcastle scientist, along with colleagues at the University of Denmark, discovered the health benefits of falcarinol in carrots four years ago.

Heat effect

Rats fed on a diet containing carrots or falcarinol were found to be one-third less likely to develop full-scale tumours than those in the control group.

Since then the scientists in Newcastle have been studying what happens when carrots are chopped and cooked.

The latest findings show that when carrots are heated, the heat kills the cells, so they lose the ability to hold on to the water inside them, increasing the concentration of falcarinol as the carrots lose water.

However, the heat also softens the cell walls, allowing water-soluble compounds such as sugar and vitamin C to be lost via the surface of the tissue, leading to the leaching out of other compounds such as falcarinol.

If the carrot is cut before being boiled, the surface area becomes much greater - and so the loss of nutrients is increased.

More tasty

Dr Brandt added that in blind taste studies the whole carrots also tasted much

better.

Eight of ten people favoured the whole vegetables over those that were pre-chopped.

This is because the naturally occurring sugars which are responsible for giving the carrot its distinctively sweet flavour were also found in higher concentrations in the carrot that had been cooked whole.

Dr Brandt said: "The great thing about this is it's a simple way for people to increase their uptake of a compound we know is good for you.

"All you need is a bigger saucepan."

Dr Kat Arney, of the charity Cancer Research UK, remained unconvinced that keeping carrots whole would have any impact on cancer risk.

She said: "When it comes to eating, we know that a healthy balanced diet - rich in a range of fruit and vegetables - plays an important part in reducing the risk of many types of cancer, rather than any one specific food."

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Carrots may help ward off cancer

Carrots contain a beneficial natural pesticide

A compound in carrots may reduce the risk of developing cancer, research suggests.

A team from the University of Newcastle Upon Tyne found the natural pesticide falcarinol reduced the risk of cancer developing in rats by a third.

They hope the discovery will lead to a new generation of anti-cancer drugs - and tips to growers on how to boost the beneficial properties of their produce.

Details are published in the Journal of Agricultural and Food Chemistry.

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Dr Kirsten Brandt

Falcarinol protects carrots from fungal diseases, such as liquorice rot that causes black spots on the roots during storage.

The scientists investigated the compound after a previous published study suggested it could prevent the development of cancer.

The research team carried out tests on 24 rats with pre-cancerous tumours.

After 18 weeks, rats who ate carrots along with their ordinary feed, and those given feed and falcarinol supplement were one third less likely to develop full-scale tumours than rats who were given just ordinary feed.

Further work

Researcher Dr Kirsten Brandt said: "We already know that carrots are good for us and can reduce the risk of cancer but until now we have not known which element of the vegetable has these special properties.

"We now need to take it a step further by finding out how much falcarinol is needed to prevent the development of cancer and if certain types of carrot are better than others, as there are many varieties in existence, of different shapes, colours and sizes.

"We could also expand our research to include other vegetables.

"For consumers, it may soon no longer be a case of advising them to eat five portions of fruit and vegetables per day but to eat particular types of these in certain quantities.

"The research could also lead to more tailored advice for growers regarding the methods they should use when growing vegetables."

The experiment was conducted using raw carrots so researchers do not yet know if eating boiled carrots or drinking carrot juice would have the same effect.

Dr Brandt recommended consumers should eat one small carrot every day, together with other vegetables and fruits.

Falcarinol is toxic in large amounts - but to obtain a lethal dose you would have to eat 400 kilograms of carrots at once.

Researchers suspect it stimulates mechanisms in the body that fight cancer.

Hazel Nunn, of Cancer Research UK, said there was plenty of evidence that eating fruit and vegetables can reduce your risk of cancer - but the reasons why were still unclear.

"People shouldn't think that eating a carrot a day will negate the effects of a diet of burgers and chocolate.

"To reduce your risk of cancer and other serious diseases our advice remains to eat at least five portions of different fruits and vegetables each day as part of a healthy and balanced diet."