

Protective properties of green tea uncovered

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Regularly drinking green tea could protect the brain against developing Alzheimer's and other forms of dementia, according to latest research by scientists at Newcastle University.

The study, published in the academic journal *Phytomedicine*, also suggests this ancient Chinese remedy could play a vital role in protecting the body against [cancer](#).

Led by Dr Ed Okello, the Newcastle team wanted to know if the protective properties of [green tea](#) – which have previously been shown to be present in the undigested, freshly brewed form of the drink – were still active once the tea had been digested.

Digestion is a vital process which provides our bodies with the nutrients we need to survive. But, says Dr Okello, it also means that just because the food we put into our mouths is generally accepted to contain health-boosting properties, we can't assume these compounds will ever be absorbed by the body.

"What was really exciting about this study was that we found when green tea is digested by enzymes in the gut, the resulting chemicals are actually more effective against key triggers of Alzheimer's development than the undigested form of the tea," explains Dr Okello, based in the School of Agriculture, Food and Rural Development at Newcastle University.

"In addition to this, we also found the digested compounds had anti-cancer properties, significantly slowing down the growth of the tumour

cells which we were using in our experiments."

As part of the research, the Newcastle team worked in collaboration with Dr Gordon McDougall of the Plant Products and Food Quality Group at the Scottish Crop Research Institute in Dundee, who developed technology which simulates the human digestive system.

It is this which made it possible for the team to analyse the protective properties of the products of digestion.

Two compounds are known to play a significant role in the development of Alzheimer's disease – hydrogen peroxide and a protein known as beta-amyloid.

Previous studies have shown that compounds known as polyphenols, present in black and green tea, possess neuroprotective properties, binding with the toxic compounds and protecting the [brain](#) cells.

When ingested, the polyphenols are broken down to produce a mix of compounds and it was these the Newcastle team tested in their latest research.

"It's one of the reasons why we have to be so careful when we make claims about the health benefits of various foods and supplements," explains Dr Okello.

"There are certain chemicals we know to be beneficial and we can identify foods which are rich in them but what happens during the digestion process is crucial to whether these foods are actually doing us any good."

Carrying out the experiments in the lab using a tumour cell model, they exposed the cells to varying concentrations of the different toxins and

the digested green tea compounds.

Dr Okello explained: "The digested chemicals protected the cells, preventing the toxins from destroying the cells.

"We also saw them affecting the cancer cells, significantly slowing down their growth.

"Green tea has been used in Traditional Chinese medicine for centuries and what we have here provides the scientific evidence why it may be effective against some of the key diseases we face today."

The next step is to discover whether the beneficial compounds are produced during digestion after healthy human volunteers consume tea polyphenols. The team has already received funding from the Biotechnology and Biological Sciences Research Council (BBSRC) to take this forward.

Dr Okello adds: "There are obviously many factors which together have an influence on diseases such as cancer and [dementia](#) - a good diet, plenty of exercise and a healthy lifestyle are all important."

Provided by Newcastle University

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