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How spicy foods can kill cancers

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Scientists have discovered the key to the ability of spicy foods to kill cancer cells.



Capsaicin in some peppers, attacks cancer cells' mitochondria

They found capsaicin, an ingredient of jalapeno peppers, triggers cancer cell death by attacking mitochondria - the cells' energy-generating boiler rooms.

The research raises the possibility that other cancer drugs could be developed to target mitochondria.

The Nottingham University study features in Biochemical and Biophysical Research Communications.

The study showed that the family of molecules to which capsaicin belongs, the vanilloids, bind to proteins in the cancer cell mitochondria to trigger apoptosis, or cell death, without harming surrounding healthy cells.

Capsaicin was tested on cultures of human lung cancer cells and on pancreatic cancers.

“ We believe that we have in effect discovered a fundamental 'Achilles heel' for all cancers ”

Lead researcher Dr Timothy Bates said: "As these compounds attack the very heart of the tumour cells, we believe that we have in effect discovered a fundamental 'Achilles heel' for all cancers.

"The biochemistry of the mitochondria in cancer cells is very different from that in normal cells.

"This is an innate selective vulnerability of cancer cells."

He said a dose of capsaicin that could cause a cancer cell to enter apoptosis, would not have the same effect on a normal cell.

Potential Drugs

The fact that capsaicin and other vanilloids are already commonly found in the diet proves they are safe to eat.

“ Cancer Research UK recommends reducing your risk of cancer by eating a healthy, balanced diet, with plenty of vegetables and fruit ”

Josephine Querido

This could make development of a drug containing them a much quicker and cheaper process.

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Dr Bates said: "Capsaicin, for example, is already found in treatments for muscle strain and psoriasis - which raises the question of whether an adapted topical treatment could be used to treat certain types of skin cancer.

"It's also possible that cancer patients or those at risk of developing cancer could be advised to eat a diet which is richer in spicy foods to help treat or prevent the disease."

However, Josephine Querido, cancer information officer at Cancer Research UK, said: "This research does not suggest that eating vast quantities of chilli pepper will help prevent or treat cancer.

"The experiments showed that pepper extracts killed cancer cells grown in the laboratory, but these have not yet been tested to see if they are safe and effective in humans."

Cancer Research UK recommends reducing the risk of cancer by eating a healthy, balanced diet, with plenty of vegetables and fruit.

Dr Bates added that the mitochondria in cancer cells could also be targeted by other compounds.

He said the investigation and development of anti-mitochondrial drugs for cancer chemotherapy was likely to be "extremely significant" in the fight against cancer.

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