

Natural plant chemicals could help fight tooth decay, study shows

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Oral care products containing a natural chemical that stops bacteria harming teeth could help prevent decay, a study suggests.

The plant natural product acts against harmful mouth <u>bacteria</u> and could improve oral health by helping to prevent the build-up of <u>plaque</u>, researchers say.

The compound - known as trans-chalcone - is related to chemicals found in liquorice root. The study shows that it blocks the action of a key enzyme that allows the bacteria to thrive in oral cavities.

The bacteria - *Streptococcus mutans* - metabolise sugars from food and drink, which produces a mild acid and leads to the formation of plaque. Without good <u>dental hygiene</u>, the combination of plaque and mouth acid can lead to tooth decay.

Researchers found that blocking the activity of the enzyme prevents bacteria forming a protective biological layer - known as a biofilm around themselves. Plaque is formed when bacteria attach themselves to teeth and construct biofilms. Preventing the assembly of these protective layers would help stop bacteria forming plaque, the teams says.

Oral care <u>products</u> that contain similar natural compounds could help people improve their dental hygiene, researchers say.

The study, led by scientists at the University of Edinburgh, is the first to



show how trans-chalcone prevents bacteria forming biofilms.

The team worked out the 3D structure of the enzyme - called Sortase A - which allows the bacteria to make biofilms. By doing this, researchers were able to identify how trans-chalcone prevents the enzyme from functioning.

The study, published in the journal *Chemical Communications*, was supported by Wm. Wrigley Jr. Company and the University of Edinburgh.

Dr Dominic Campopiano, of the University of Edinburgh's School of Chemistry, who led the study, said: "We were delighted to observe that trans-chalcone inhibited Sortase A in a test tube and stopped *Streptococcus mutans* biofilm formation. We are expanding our study to include similar natural products and investigate if they can be incorporated into consumer products. This exciting discovery highlights the potential of this class of <u>natural products</u> in food and healthcare technologies."

Provided by University of Edinburgh

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