# Luteolin stars in study of healthful plant compounds

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Natural compounds in plants may protect us against unwanted inflammation. However, human nutrition researchers agree that many questions remain about exactly how these compounds, known as phytochemicals, do that. Studies led by Agricultural Research Service (ARS) molecular biologist Daniel H. Hwang are providing some of the missing details.

Certain kinds of inflammation can increase risk of cancer and of some other disorders, including heart disease and insulin resistance, according to Hwang. He's with the ARS Western Human Nutrition Research Center at the University of California-Davis.

Some of Hwang's on-going studies build upon earlier research in which he and colleagues teased out precise details of how six natural compounds in plants--luteolin, quercetin, chrysin, eriodicytol, hesperetin, and naringenin--apparently act as anti-inflammatory agents.

Luteolin is found in celery, thyme, green peppers, and chamomile tea. Foods rich in quercetin include capers, apples, and onions. Chrysin is from the fruit of blue passionflower, a tropical vine. Oranges, grapefruit, lemons, and other citrus fruits are good sources of eriodicytol, hesperetin, and naringenin.

Hwang's team showed, for the first time, that all six plant compounds target an enzyme known as "TBK1." Each compound inhibits, to a greater or lesser extent, TBK1's ability to activate a specific biochemical

signal. If unimpeded, the signal would lead to formation of gene products known to trigger inflammation.

Of the six compounds, luteolin was the most effective inhibitor of TBK1. Luteolin is already known to have anti-inflammatory properties. However, Hwang and his colleagues were the first to provide this new, mechanistic explanation of how luteolin exerts its anti-inflammatory effects.

The approaches that the researchers developed to uncover these compounds' effects can be used by scientists elsewhere to identify additional anti-inflammatory compounds present in fruits and vegetables.

**More information:** Their findings on phytochemicals that act as TBK1 inhibitors appear in Biochemical Pharmacology and in the Journal of Immunology.

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