

## Alternative pathway implicated as an influencing factor in the synthesis of theaflavin

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### Abstract

The principal pigments present in black tea, theaflavins (TF), have been indicated to be of potential clinical significance in various fields of research which has been hampered by the very low levels of TFs from black tea extractions, being the original method employed to acquire TFs. Forelle pear (44 $\mu$ M TF/g dry weight/h) and Yacon leaf (65 $\mu$ M TF/g dry weight/h) homogenates were tested for their TF synthesis capacity and found to have a larger TF synthesis capacity than a green tea leaf homogenate (26 $\mu$ M TF/g dry weight/h) based upon the flavonost method. In an incubation system of green tea leaf extract utilizing endogenous enzymes present in Forelle pear and Yacon homogenates to synthesize TF, the formation of an unknown peak [m/z 563.1349; (23.95)<sup>(sup5)</sup>; C<sub>(sub26)</sub>H<sub>(sub28)</sub>O<sub>(sub14)</sub>] was detected by mass spectrometry with a molecular mass similar to TF. This is in contrast to TF being solely synthesized in an in vitro model incubation system using isolated catechins and purified Forelle pear polyphenol oxidase. The preferential formation of the unknown compound could explain the low levels of TFs in black tea.