

Human saliva-mediated hydrolysis of eugenyl- β -D-glucoside and fluorescein-di- β -D-glucoside in In Vivo and In Vitro models.

Autorzy

Mariusz Dziadas

Adam Junka

Henryk Jeleń

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Streszczenie

Eugenyl- β -D-glucopyranoside, also referred to as Citrusin C, is a natural glucoside

found among others in cloves, basil and cinnamon plants.

Eugenol in a form of free aglycone is

used in perfumeries, flavourings, essential oils and in medicinal products. Synthetic Citrusin C

was incubated with human saliva in several in vitro models together with substrate-specific enzyme

and antibiotics (clindamycin, ciprofloxacin, amoxicillin trihydrate and potassium clavulanate).

Citrusin C was detected using liquid chromatography with tandem mass spectrometry (LCMS/

MS). Citrusin C was completely degraded only when incubated with substrate-specific *A. niger*

glucosidase E.C 3.2.1.21 (control sample) and when incubated with human saliva (tested sample).

The addition of antibiotics to the above-described experimental setting, stopped Citrusin C

degradation, indicating microbiologic origin of hydrolysis observed. Our results demonstrate that

Citrusin C is subjected to complete degradation by salivary/oral cavity microorganisms. Extrapolation

of our results allows to state that in the human oral cavity, virtually all β -D-glucosides

would follow this type of hydrolysis. Additionally, a new method was developed for an in vivo

rapid test of glucosidase activity in the human mouth on the tongue using fluorescein-di- β -D-glucoside

as substrate. The results presented in this study serve as a proof of concept for the hypothesis

that microbial hydrolysis path of β -D-glucosides begins immediately in the human mouth and releases

the aglycone directly into the gastrointestinal tract.

Słowa kluczowe

β -glucosides, hydrolysis, human saliva

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