

RESEARCH PROJECT

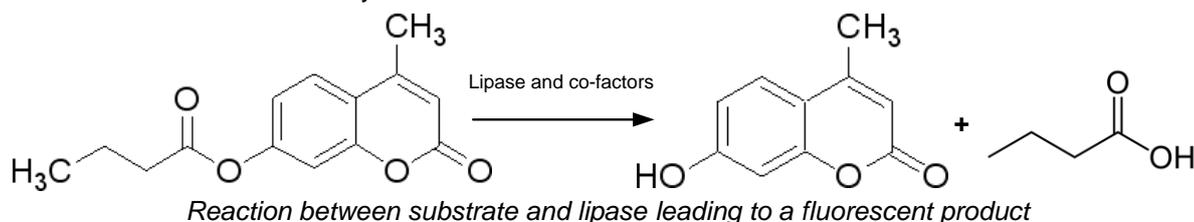
π Institute
Life Technologies

Inhibition of the pancreatic lipase by vegetal compounds

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Description This project aimed to develop a quick screening test for lipase inhibition activity. To compare as much as possible an *in vivo* situation, the test is preceded by a gastric and an intestinal digestion. A fluorescent molecule is used to perform the analysis. The 4-methylumbelliferyl butyrate is a molecule who is able to be transformed by lipase and who carries a fluorescent structure activated after the reaction with the enzyme.



The rate of formation of the product is linked directly with the lipase activity speed. A measurement in the optimal conditions of the lipase is used to determine the max rate used to compare with assays with samples.

Compared to some plants with more than 70% inhibition, our reference, the pharmaceutical compounds Xenical™/Orlistat showed a relatively low activity in the lipase inhibition assay. One explanation might be the enzyme's source for the test, pancreatin from Sigma Aldrich, which is a mix of different enzymes and salts obtain from porcine pancreas. Orlistat specifically inhibits the pancreatic lipase but some esterase available in the pancreatin stay active and are able to perform their activity on the substrate. The plants provide a large spectrum of activity, far larger than Xenical™. Therefore, the remaining activity of esterases, able to cleave fatty acid esters might explain the lower inhibition activity of Xenical. With about 20% of activity reduction and kept in mind the low amount of Xenical applied, our assay confirms Xenical to be a potent lipase inhibitor.

A powerful test-system to identify lipase inhibition activity. This model can be easily transformed to develop other enzyme inhibition tests

D. Prim, W. Andlauer: Des plantes contre l'obésité, *Alimenta* 2009, 10, 12-13

W. Andlauer, P. Prunier, D. Prim: Fluorometric Method to Assess Lipase Inhibition Activity, *Chimia* 2009, 63 (12) 897-899

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