

CHEMOENZYMATIC SYNTHESIS OF FERULOYL SUGARS IN NON-CONVENTIONAL MEDIA

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Phenolic acid sugar esters have demonstrable antitumor activity and have the potential to be used to formulate antimicrobial, antiviral and / or anti-inflammatory agents. As esters based on unsaturated arylaliphatic acids, like cinnamic acid and its derivatives, are known to display anticancer activity.

Over the last ten years, feruloyl esterases (FAE, E.C. 3.1.1.73) responsible for cleaving the ester-link between the polysaccharides main chain of xylans and monomeric or dimeric ferulic acid have been purified and partially characterized. Specific feruloyl esterases could be employed in the transfer of feruloyl group to sugars (e.g. L-arabinose)^{1,2} using ternary water-organic solvent mixtures, or oil-in-water microemulsions as a reaction system.

In the present work, the hydrolytic and synthetic selectivity of a type C feruloyl esterase (StFAEC) from *Sporotrichum thermophile* was studied. Factors including reaction temperature, and type of alkyl ferulates, which were used as feruloyl donors, were investigated to evaluate their effect on initial rate and conversion of feruloyl L-arabinobiose. Furthermore, the correlation between hydrolytic and synthetic activity of esterase against different types of straight and branched C₁-C₄ alkyl ferulates was investigated.

References:

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