Enantioselective Hydrolysis of Bromo- and Methoxy-Substituted 1-Phenylethanol Acetates Using Carrot and Celeriac Enzymatic Systems

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Dedicated to Prof. Antoni Siewiński on the occasion of his 80th birthday

Enantioselective hydrolysis of bromo- and methoxy-substituted 1-phenylethanol acetates was conducted using comminuted carrot (Daucus carota L.) and celeriac (Apium graveolens L. var. rapaceum) roots. Hydrolysis of the acetates led to alcohols, preferentially to $R$-(+)-enantiomers. Efficiencies of both reactions – hydrolysis of the acetates with an electron-donating methoxy group and oxidation of the resulting alcohols – increased in the following order: ortho < meta < para. The presence of an electron-withdrawing bromine atom in the aromatic ring had the opposite effect. Oxidation of alcohols with both types of substituents in the aromatic ring showed that location of a substituent had stronger impact on the oxidation rate than its electronic properties.

Key words: Vegetable, Hydrolysis, Oxidation