Purification of Tetragalloylglucose 4-O-Galloyltransferase and Preparation of Antibodies against This Key Enzyme in the Biosynthesis of Hydrolyzable Tannins

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The enzyme, β-glucogallin: 1,2,3,6-tetra-O-galloyl-β-d-glucose 4-O-galloyltransferase, which catalyzes the last common step in the biosynthesis of the two subclasses of hydrolyzable tannins, i.e. gallotannins and ellagitannins, was purified 868-fold from leaves of pedunculate oak (Quercus robur, syn. Q. pedunculata) to apparent homogeneity. Polyclonal antibodies against this pivotal enzyme were raised in rabbits and purified by protein-A chromatography, gel-filtration and affinity complexation. They were found to react specifically with acyltransferase from oak, displaying no cross-reactivity towards analogous enzymes from other plants synthesizing hydrolyzable tannins along the same biogenetic route, e.g. Rhus typhina or Tellima grandiflora.