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Production of a novel opine dehydrogenase

Nevena Kaličanin[1*], Ana Marija Balaž[1], Olivera Prodanović[2], Radivoje Prodanović[3]

[1]*University of Belgrade - Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Belgrade, Serbia*
[2]*University of Belgrade - Institute for Multidisciplinary Research*
[3]*University of Belgrade - Faculty of Chemistry*

[*]*e-mail: nevena.kalicanin@ihtm.bg.ac.rs*

Opine dehydrogenases are a family of NAD(P)H dependent oxidoreductases, which catalyze the reductive condensation of an α amino group from an amino acid with an α-keto acid during anaerobic glycolysis by regenerating NAD[1,2]. They are widespread in cephalopods and mollusks. Opines are associated with crown gall tumor pathogenesis caused by *A. tumefaciens* providing nutrients to the pathogen, and novel opine compounds acting as metallophores have been identified.[1] Besides, opine-type secondary amine dicarboxylic acids are chiral intermediates of angiotensin-converting enzyme inhibitors[3]. A novel enzyme originating from an extremophile bacterium, with assumed opine dehydrogenase function was successfully expressed in Escherichia coli STAR cells and purified by affinity chromatography. Molecular mass determined by SDS-PAGE was approximately 40 kDa. The activity was measured by using pyruvate and alanine as substrates, by which proved that it has opine dehydrogenase activity.

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