Iodoperoxidation of tyrosine derivatives by Vanadium Haloperoxidases

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Tyrosine is a biologically important aminoacid with a special role in the synthesis of thyroide hormones, catecholamines, melanin and halogenated secondary metabolites.

Biologically important iodinated metabolites include the iodotyrosine derivatives mono and diiodotyrosine and also the thyroide hormones.

The formation of iodoaminoacids and other iodinated metabolites is very common specially in the marine environment. These halometabolites are known for their biocidal properties and therefore an understanding of their biosynthetic pathways may provide convenient biotechnological methods for the application of halogenation reactions to the pharmaceutical industry.

Vanadium haloperoxidases (V-HPO) are though to be involved in the production of halogenated metabolites and so we decided to investigate the role of these enzymes in the production of iodometabolites.

The iodoperoxidation reactions of the aminoacids L and D- tyrosine, dihidroxiphenylalanine (L-DOPA) and phenylalanine were studied using the V-HPO from the brown seaweed *Laminaria saccharina*.

These reactions were followed by UV-Vis spectrophotometry in several conditions. The kinetics parameters, K_m and k_{cat} for each substrate were determined and the possible mechanisms are discussed and correlated to the physiological role of these enzymes.