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Enzymatic synthesis of 2-bromide-L-phenylalanine labelled with isotopes of hydrogen

Abstract. Interest in the synthesis of the aromatic amino acid L-phenylalanine, has increased significantly over the last six years. One of the better known bioconversions is that using trans-cinnamic acid and the enzyme Phenylalanine Ammonia-Lyase (PAL). The enzyme has been obtained from a number of plant and microbial sources including redpigmented yeasts, *Rhodotorula glutinis.* The PAL enzyme requires no cofactors and catalyses the nonoxidative deamination of L-phenylalanine to trans-cinnamic acid and ammonium ions, although it is the reverse reaction which is of specific interest to chemists.

Enzymatic synthesis of amino acids labelled with stable isotopes, including deuterium (^{2}H) or tritium (^{3}H) is used to known a mechanism of some reactions and also is suitable for biomedical applications and clinical diagnostics. The positron-emitting radiohalogens e.g. ^{18}F, ^{75}Br, ^{76}Br and ^{124}I are reviewed regarding their relevance for positron emission tomography (PET) in oncology.

Key words: phenylalanine ammonia lyase (PAL), L-phenylalanine, cinnamic acid, bromine-76, positron emission tomography (PET).