

COVALENT HYDRATION OF 7,8-DIHYDRO(3H)PTERIN

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Peroxidase catalysed aerobic degradation of 5,6,7,8-tetrahydrobiopterin I, 5,6,7,8-tetrahydroneopterin II, and 6-hydroxymethyl-5,6,7,8-tetrahydropterin III at neutral pH yield the same 7,8-dihydroxanthopterin VIII *via* an intermediate pterin. These degradations involve the same intermediate, 7,8-dihydro(3H)pterin IV, which is identified by u.v. spectra at three pH values and HPLC comparison with an authentic sample. Peroxidase catalysed aerobic oxidation of authentic 7,8-dihydro(3H)pterin proceeds in the same way as the intermediate in the above three degradations. In order to explain the formation of 7,8-dihydroxanthopterin covalent hydration of 7,8-dihydro(3H)pterin is postulated. Evidence for the formation of the covalent hydrate, 6-hydroxy-5,6,7,8-tetrahydropterin V, and the reversibility of the hydration process, will be presented together with p.m.r. evidence for the reversible addition of nucleophiles (e.g. HSO_3^-) across the 5,6-double bond.

