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Metabolism of linamarin in rats

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Abstract

The metabolism of linamarin [2(β-d-glucopyranosyloxy)isobutyronitrile] was investigated in male albino Wistar rats and using rat liver microsomal preparations. In the *in vitro* experiments incubations of varying concentrations of linamarin at pH 6.0–6.5 with liver microsomal preparations resulted in rapid degradation of the substrate without concomitant production of any detectable amount of hydrogen cyanide (HCN) or of thiocyanate, its detoxication derivative. Boiled incubation medium did not degrade linamarin. Mathematical treatment of the degradation data generated theoretical HCN values that were used to construct a Lineweaver-Burke plot, which gave apparent K_m and V_{max} values of 3.3 mm-linamarin and 0.017 mg HCN/min/mg protein, respectively. In the *in vivo* experiments excretion of glucosidic cyanide (linamarin) in rat urine was found, within the range of applied oral doses 10–350 mg/kg body weight, to be dose dependent. Urinary excretion of HCN and thiocyanate did not show this correlation. Following administration (iv) of 10, 50 or 100 mg linamarin, elimination of the test substance from rat blood was observed to occur exponentially, and the half-life was estimated at about 90 min for all three dose levels.

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