Short communication

Trimetazidine increases [3H]glucose uptake in rat brain

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Abstract:
Trimetazidine, a clinically effective antianginal agent with no negative inotropic or vascular properties, acts by optimizing cardiac energy metabolism through inhibition of free fatty acid oxidation, shifting substrate utilization from fatty acids to glucose. Up to now there has been no study associating trimetazidine’s effect on metabolic processes with glucose utilization in the mammalian brain. The objective of the present study was to determine if trimetazidine altered [3H]glucose uptake in rat brain. Adult male Wistar rats were administered trimetazidine (Metazydyna, Polfa) either as a single dose (10.0 mg/kg po) or for 14 consecutive days (5.0 mg/kg po per day) or vehicle saline (2.0 ml/kg po). Sixty minutes after the single dose or 14th dose of trimetazidine, and 15 min before experiment termination and brain dissection, 6-[3H]D-glucose (500 Ci/kg ip; Amersham) was administered. Using liquid scintillation counting, trimetazidine, either in a single or multiple dose regimen, was found to increase [3H]glucose uptake (DPM/100 mg of wet tissue) in all dissected regions of the brain (i.e., striatum, hippocampus, frontal cortex, thalamus with hypothalamus, pons with medulla oblongata, and cerebellum). Therefore, central effects need to be taken into consideration as possibly adding to known beneficial cardiac effects of trimetazidine.

Key words: trimetazidine, [3H]glucose, brain, rats