Effect of thyroid hormone administration on the depletion of circulating glutathione in the isolated perfused rat liver and its relationship to basolateral ??glutamyltransferase activity

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The influence of thyroid hormone administration on liver glutathione (GSH) extraction in the isolated perfused liver was studied in fed rats for a period of 1?7 days following a single dose of 0.1 mg 3,5,3??triiodothyronine (T3)/kg. T3 treatment led to an early and transient calorigenic response, as well as an enhancement in liver GSH removal, reaching a maximal effect at 2 days after hormone administration, which was normalized in the 3? to 7?day period studied. Addition of the ??glutamyltransferase (??GT) inhibitor DL?serineborate (4 mM) to the perfusate abolished the increase in the hepatic removal of GSH elicited by T3, and enhanced the sinusoidal concentration of GSH, studied at 2 days after hormone administration. These data support the role of hepatic basolateral ??GT ectoactivity in the depletion of portally added and liver?derived GSH as an adaptive response to recover GSH levels after reduction by T3?induced oxidative stress.