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Assay of alanine:glyoxylate aminotransferase in human liver by its serine: glyoxylate aminotransferase activity

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ABSTRACT

We have examined assay methods and conditions for human liver alanine:glyoxylate aminotransferase (AGT). This enzyme shows not only the AGT activity but also serine:pyruvate and serine: glyoxylate aminotransferase (SPT and SGT) activities. In the assay of AGT activity using crude enzyme preparations, there is the complication that glutamate:glyoxylate aminotransferase (GGT) also contributes to AGT activity, but at present no other enzyme is known to catalyze transamination between L-serine and glyoxylate or pyruvate. Therefore, an assay for AGT using its SGT activity was investigated in which hydroxypyruvate formed from L-serine in the enzymic reaction with glyoxylate was determined by lactate dehydrogenase (LDH) in the presence of tris(hydroxym ethyl) aminomethane (Tris) at pH 8.4. A possible obstacle to this assay is that pyruvate formed from L-serine by serine dehydratase (SDH) interferes with SGT assay as an additional substrate of LDH and AGT. However, the SDH activity in human liver is very low, and by performing the SGT reaction in the presence and absence of glyoxylate the SGT activity was represented as the glyoxylate-dependent hydroxypyruvate formation from L-serine. There was a combined good correlation between the AGT, SGT and SPT activities, and the activity ratio, AGT : SGT : SPT was about 1.0 : 0.17 : 0.13.

[PDF (569K)] [References]

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