

On the Metabolism of Thiosulfate Esters

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When sodium sulfocysteine [$\text{NaS}_2\text{O}_3\text{CH}_2\text{CH}(\text{NH}_2)\text{COOH}$] or aminoethylthiosulfuric acid [$\text{NH}_2\text{C}_2\text{H}_4\text{S}_2\text{O}_3\text{H}$] were incubated with rat liver homogenates under aerobic conditions, sulfate was formed. Under anaerobic conditions sulfite was formed instead of sulfate, but sulfite is oxidized to sulfate in the presence of oxygen by the action of sulfite oxidase¹. The formation of sulfite was a non-enzymic reaction involving protein-bound sulfhydryl groups. The other reaction product was a protein-bound mixed disulfide. As the protective

properties of certain sulfur compounds against ionizing radiation have been attributed to their capacity to form mixed disulfides², the possibility was considered that thiosulfate esters should also protect against ionizing radiation. This has been experimentally verified in the case of aminoethylthiosulfuric acid³. The presence of an enzyme in rat liver, which forms thiosulfate from sulfocysteine (but not from aminoethylthiosulfuric acid) was also found and this supports earlier work of Cavallini and Stirpe⁴, who observed an increased excretion of thiosulfate in rats injected with sulfocysteine.

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2. Eldjarn, L. and Pihl, A. *J. Biol. Chem.* **223** (1956) 341.
3. Holmberg, B. and Sörbo, B. *To be published.*
4. Cavallini, D. and Stirpe, F. *Atti accad. nazl. Lincei, Rend. Classe sci. fis. mat. e nat.* **20** (1956) 378.