

Proline transport by tsetse fly *Glossina morsitans* flight muscle mitochondria.

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Abstract

Proline accumulation by tsetse fly *Glossina morsitans* flight muscle mitochondria was studied in vitro by the swelling technique and direct measurement of (U-14C) proline. 2. Proline transport was inhibited by the uncharged liposoluble -SH reagent, N-ethylmaleimide but not by ionic reagent, mersalyl, suggesting that the -SH groups involved in the transport of proline are located in a hydrophobic part of the membrane or on the matrix side of the membrane. 3. The kinetic study of proline accumulation revealed saturation kinetics and a high temperature dependence. It gave a K_m of 85 μM and a V_{max} of 962 pmol/min/mg protein and an activation energy (E_a) of 11 kcal/mol . 4. Certain other amino acids (L-valine, L-alanine, L-methionine, L-phenylalanine, L-tryptophan and L-hydroxyproline) significantly stimulated proline uptake. 5. These observations indicate that tsetse fly *Glossina morsitans* flight muscle mitochondria contain a proline transport mechanism.