Kinetic analysis of FDG uptake in AH109A

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Abstract

Kinetic parameters of *in vitro* ^{3}H-fluopodeoxyglucose (FDG) and ^{3}H-O-methylglucose (MeG) uptake against extracellular glucose concentration were investigated in rat ascites hepatoma strain (AH109A). The FDG uptake into AH109A was obviously different from rat erythrocyte that followed Michaelis-Menten kinetics. The rate of FDG uptake in AH109A increased till 1 mM of glucose and it decreased till physiological level (5mM), then gradually increased as glucose concentration increased. On the other hand, MeG transport was not affected by the glucose concentration and its uptake rate was almost constant (0.01%) of the glucose level. This specific intracellular uptake pattern of FDG was similar to the substrate inhibition model. Therefore glucose transport in AH109A is likely to be down regulated at particular concentration of glucose. Dexamethasone did not affect this specific uptake pattern but apparently inhibited simple diffusion of FDG into AH109A, probably it alters the characteristics of membrane permeability to inhibit apparent simple diffusion of FDG.