

P31 Taurine transport at the blood-brain barrier in spontaneously hypertensive rats and normotensive rats

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Taurine, 2-aminoethanesulfonic acid is widely distributed in animal tissues and has a variety of biological activities. A recent worldwide study demonstrated beneficial effects of taurine on aging and age-associated disorders. In general, taurine levels in the brain decrease when an animal is subjected to pathologic conditions such as ischemia-anoxia and seizure. But taurine levels tend to increase in the brain in hypertention. In the present study, the blood-brain barrier (BBB) transport of [³H]taurine was compared between spontaneously hypertensive rats (SHR) and normotensive Sprague-Dawley rats (SD) using Internal artery carotid perfusion (ICAP) at a rate of 4ml/min for 10, 15 and 30 second. Calculated V_D , volume of distribution in brain, and PS, the permeability surface area product of [³H]taurine through the BBB in SHR was a little lower than that in SD. PS for 15s is more higher than that of other seconds in both of them. It could be followed by taurine efflux back into blood after 15s. We also obtained pharmacokinetic parameters using intravenous injection of plasma volume marker, [¹⁴C]sucrose and [³H]taurine. PS value of [³H]taurine in SHR ($16.1 \pm 2.9 \times 10^{-3}$ ml/min/g) was significantly higher than that in SD ($7.4 \pm 0.8 \times 10^{-3}$ ml/min/g). There is also significant difference for %ID/g in brain between SHR (0.195 ± 0.031) and SD (0.058 ± 0.003). This is due to difference of area under the concentration curve

(AUC) and that of total clearance (Cl_{ss} , ml/min/kg) between SHR and SD. No significant difference was indicated from other organ uptakes such as lung, heart, liver between SHR and SD. But kidney uptake was more higher in SHR.

In conclusion, [^3H]taurine in plasma is slowly eliminated in SHR than in SD and brain uptake of [^3H]taurine in SHR is far higher than that of SD. This results suggest increased taurine level in the brain in hypertension have an any effect on the brain uptake of taurine. But further studies are needed to confirm whether there is correlation or not.