

References

- FOLDES, A. & COSTA, E. (1975). Relationship of brain monoamine and locomotor activity in rats. *Biochem. Pharmac.*, **24**, 1617–1621.
- GRAHAME-SMITH, D.G. (1971). Studies *in vivo* on the relationship between brain tryptophan, brain 5HT synthesis and hyperactivity in rats treated with a monoamine oxidase inhibitor and L-tryptophan. *J. Neurochem.*, **18**, 1053–1066.
- MARSDEN, C.A. & CURZON, G. (1974). Effects of lesions and drugs on brain tryptamine. *J. Neurochem.*, **23**, 1171–1176.
- SAAVEDRA, J.M. & AXELROD, J. (1973). Effect of drugs on the tryptamine content of rat tissues. *J. Pharmac. exp. Ther.*, **185**, 523–529.
- SLOAN, J.W., MARTIN, W.R., CLEMENTS, T.H., BUCHWALD, W.F. & BRIDGES, S.R. (1975). Factors influencing brain and tissue levels of tryptamine: species, drugs and lesions. *J. Neurochem.*, **24**, 523–532.

Monoamine oxidase activity at different levels of rat spinal cord

A.J. GEORGE

Pharmacology Department, School of Pharmacy, Liverpool Polytechnic, Liverpool, U.K.

Monoamine oxidase (MAO) exists in at least two forms, 'A' and 'B' which exhibit different substrate

(1×10^{-7} M) a specific type B inhibitor was determined for homogenates of each spinal region.

George & Jones (1976) have demonstrated that the ratio of type A/B MAO in rat brain is 1.5:1. The present results show that for whole spinal cord the ratio was 4:1 while for the thoracic section it was 9:1. A ratio of 9:1 has been demonstrated in sympathetic ganglia (Goridis & Neff, 1971).

It is suggested that differences in MAO ratios between regions of the spinal cord may be related to

Table 1 Differential MAO inhibition in spinal cord

Tissue	% Inhibition of MAO activity		Ratio type A/B MAO activity
	Clorgyline (1×10^{-7} M)	Pargyline (1×10^{-7} M)	
Whole cord	81.9%	23.2%	4:1
Cervical cord	70.7%	28.9%	2.3:1
Thoracic cord	90.7%	9.8%	9:1
Lumbar cord	61.3%	39.4%	1.5:1
Sacral cord	82.5%	21.2%	4:1

affinities and inhibitor susceptibilities (Squires, 1972). Rat spinal cord MAO exhibits 80% type A activity and 20% type B activity (George & Jones, 1976). In this study, MAO activity was investigated in different regions of rat spinal cord. Male rats 200–250 g were anaesthetized and the spinal cord was divided, *in situ*, into its cervical, lumbar, thoracic and sacral segments. The MAO activity of homogenates of each cord region was determined as previously described by George & Jones (1976). Each homogenate sample was incubated with [14 C]-tyramine (0.3 μ Ci) which is a substrate for both MAO types. The protein concentration of each homogenate sample was determined as described by Lowry, Roseborough, Farr & Randall (1951) and the MAO activity was expressed as ng product mg protein $^{-1}$ h $^{-1}$. By separate assays, the percentage inhibition of MAO produced by clorgyline (1×10^{-7} M) a specific type A inhibitor and pargyline

the distribution of efferent pathways and neurotransmitters in the cord.

References

- GEORGE, A.J. & JONES, G.T. (1976). Studies on monoamine oxidase in rat spinal cord. *Br. J. Pharmac.*, **58**, 279P.
- GORIDIS, C. & NEFF, N.H. (1971). Evidence for a specific monoamine oxidase associated with sympathetic nerves. *Neuropharmac.*, **10**, 557–564.
- LOWRY, O.H., ROSEBOROUGH, N.F., FARR, A.L. & RANDALL, R.L. (1951). Protein measurement with the Folin phenol reagent. *J. Biol. Chem.*, **193**, 265–275.
- SQUIRES, R.F. (1972). Multiple forms of monoamine oxidase in intact mitochondria. In *Monoamine oxidases—New vistas (Biochemical Psychopharmacology, Vol. 5)*, eds Costa, E. & Sandler, M., pp. 355–371. Raven Press: New York.