interference was challenged by injecting either DDC or 3IT 1 hr before injection of the other inhibitor. In these conditions the rate of depletion of noradrenaline was not different from that observed after simultaneous administration.

Again the possibility was considered that combination of the two inhibitors modified catabolism or storage of noradrenaline but the available evidence makes this unlikely.

The possibility remains that the products of the two enzyme-controlled conversions, tyrosine to dopamine and dopamine to noradrenaline, themselves regulate the kinetics of the enzyme-catalysed reactions. Some evidence of this kind has been provided by Stjarne, Lishajko & Roth (1967), who showed that the intraneuronal level of noradrenaline activated the enzymes involved in biosynthesis.

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The removal of L-tryptophan from cerebrospinal fluid in the dog

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Endogenous levels of tryptophan, the amino-acid precursor of 5-hydroxytryptamine, in cerebrospinal fluid (CSF) obtained from lateral ventricle and cisterna magna were both found to be only 10% of tryptophan concentrations in plasma. The removal of L-tryptophan from CSF was studied in the conscious dog by means of the technique of Ashcroft, Dow & Moir (1968) for recirculatory perfusion of the cerebral ventricular system. The clearance from CSF of exogenous L-tryptophan or ^{14}C-L-tryptophan infused into the perfusion system over a wide range of infusion concentrations (0·18–1,800 μg/ml.) in different dogs, was found to be 270% of simultaneously determined clearance of inulin, a substance known to be removed from CSF almost solely through the arachnoid villi. Tryptophan and inulin clearances were not altered by thiopentone anaesthesia.

Levin, Nogueira & Garcia Argiz (1966) have studied the removal of the amino-acids, glutamic acid, glutamine, β-aminobutyric acid, leucine, β-alanine, glycine, phenylalanine, lysine, valine and tyrosine from a ventriculo-cisternal perfusion system in anaesthetized cats. They found that these amino-acids were cleared at similar rates to inulin.

In the dog, tryptophan obviously has mechanisms of removal from CSF additional to bulk filtration. As the clearance of tryptophan is apparently not dependent on

its concentration in the perfusate a readily saturable mechanism such as carrier transport or exchange diffusion would not seem to be involved. This is unlike the mechanism of localized active transport demonstrated for the removal of its 5-hydroxyindole acid metabolite, 5-hydroxyindol-3-ylacetic acid (5-HIAA), from CSF (Ashcroft *et al.*, 1968).

Tryptophan in human plasma has been shown to be strongly protein bound (McMenamy, Lund & Oncley, 1957). Therefore a possible explanation for the observed clearance of tryptophan from the CSF perfusate could be its removal by simple diffusion into the bloodstream where only a small proportion of the total concentration of tryptophan in the plasma will be diffusible.

Another explanation might be provided if tryptophan was continuously removed by metabolism in brain tissue. This possibility is currently under investigation. Preliminary studies, however, indicate no significant cerebral metabolism along the 5-hydroxyindole pathway, as evidenced by the failure of the acid metabolite 5-HIAA to rise in the CSF perfusate during the infusion of tryptophan into the perfusion system.

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Uptake of [^{14}C]-glycine by rat spinal cord

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There is now much evidence to support the suggestion that glycine may be an inhibitory transmitter in the mammalian spinal cord. The distribution of this amino-acid in the spinal cord of the cat has been related to the presence of inhibitory interneurones (Davidoff, Shank, Graham, Aprison & Werman, 1967). Glycine hyperpolarizes spinal motorneurones (Werman, Davidoff & Aprison, 1967) and the changes in membrane permeability produced by glycine seem to be similar to those produced by a spinal inhibitory synaptic transmitter (Curtis, Hösli, Johnston & Johnston, 1968). Strychnine, which reduces spinal post-synaptic inhibition, blocks the effects of glycine on spinal motorneurones (Curtis, Hösli & Johnston, 1967).

The mechanism by which the actions of spinal inhibitory transmitters and iontophoretically applied glycine are terminated is not known. Because *p*-hydroxymercuribenzoate potentiates the inhibitory action of glycine on spinal interneurones, it has been suggested that glycine is inactivated enzymically (Curtis, Hösli & Johnston, 1968). However, an alternative method of inactivation may involve an uptake mechanism in the neural tissue of the cord similar to that described by Iversen & Neal (1968) for GABA in the cerebral cortex. Although glycine is taken up by slices of brain (Smith, 1967) there has apparently been no previous report of an uptake mechanism for glycine in the spinal cord.

Slices of rat spinal cord (0·1 × 0·1 × approx. 0·2 mm) were suspended in Krebs-bicarbonate solution and distributed volumetrically. Slices of cord equivalent to