Finally we have shown that even large doses of normetanephrine (2 mg) injected intraperitoneally are without effect on spontaneous locomotor activity.

Degeneration of adrenergic nerves produced by 6-hydroxydopamine

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6-Hydroxydopamine (6-OH-DA) has been shown to deplete adrenergic nerves of endogenous noradrenaline (NA) (Porter, Totaro & Stone, 1963; Laverty, Sharman & Vogt, 1965; Thoenen, Hurlimann & Haefely, 1968). Several explanations for this depleting effect have been reported. Degenerative changes of sympathetic nerves in the cat have been observed in the electron microscope after injection of 6-OH-DA (Tranzer & Thoenen, 1967).

The purpose of this study was to investigate the action of 6-OH-DA on the adrenergic nerves by means of the histochemical fluorescence method of Falck and Hillarp for demonstration of catecholamines. Irides and atria from mice were prepared as stretch preparations and superior cervical ganglia and vas deferens were freeze dried. All tissues were treated with formaldehyde gas at 80° C for 1 hr, before examination by the fluorescence microscope. After the intravenous administration of 6-OH-DA (HBr, 20 mg/kg) the fluorescence of the adrenergic nerves of the iris underwent a general reduction within 15 min; after 1–2 hr there were no nerves visible in most animals. After about 8 hr strongly fluorescent parts of non-terminal axons terminating in a bulge could be seen. A complete restoration was not seen in 14–16 days.

The effect of 6-OH-DA at this dose level was not so pronounced on the other organs studied. Desmethylimipramine (25 mg/kg, 30 min beforehand) prevented the effect of 6-OH-DA. Reserpine (10 mg/kg, 30 min beforehand) did not delay the effect of 6-OH-DA, while nialamide (100 mg/kg, 1 hr beforehand) delayed the disappearance of NA somewhat and bretylium tosylate (50 mg/kg 30 min beforehand) even more.

There was no restoration of specific fluorescence after administration of α-methyl-NA (0.2 mg/kg I.V.) as long as the specific fluorescence from endogenous NA was lacking. This was not explained by blocking of the axon membrane pump by 6-OH-DA. These data support the assumption that 6-OH-DA or some metabolite causes a degenerative destruction of the sympathetic nerves, and that 6-OH-DA could be useful tool for achieving a chemical sympathectomy.

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The effect of tyramine, reserpine and other drugs on catecholamine metabolism in man

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There may be at least two forms of bound noradrenaline in the tissues; one appears to be liberated by nerve stimulation and by tyramine directly into the bloodstream, where