response" for each group of test animals. This value is plotted against challenge number; producing a line rising above the abscissa in cases of hypersensitivity, and fluctuating about it in cases of nonhypersensitivity. The height of the line above the abscissa is a direct measure of the degree of hypersensitivity.

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Cholinesterases and cholineacetylase in the nervous system of the rat

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Klingman, Klingman & Poliszczuk (1968) recently published a report of a quantitative study of cholinesterases using homogenates of the rat sympathetic nervous system. In the present investigation, cholinesterases and cholineacetylase were measured in lyophilized sections of the rat sympathetic nervous system and spinal cord. The advantage of lyophilized sections is that ganglionic tissue can be dissected free from the connective tissue capsule. Total cholinesterase (ChE_T), acetylcholinsterase (AChE) and cholineacetylase (ChAc) were assayed using [^{14}C] acetylcholine, [^{14}C] acetyl-β-methyl choline and [^{14}C] acetyl CoA respectively. The 6 μ sections were lyophilized and weighed on a fish-pole balance (Buckley, Evans & Nowell,

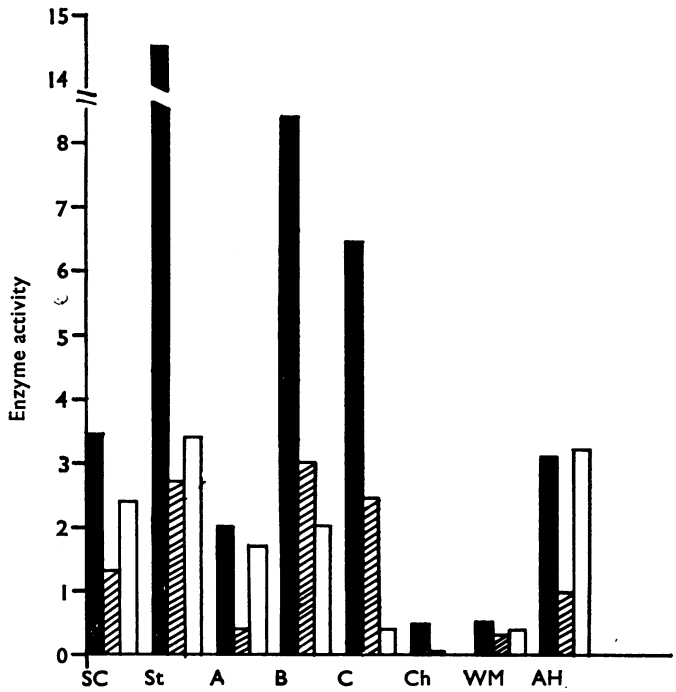

FIG. 1. Total cholinesterase ■, acetyl cholinesterase ▨, and cholineacetylase □ activity in rat nervous system. Activities expressed as moles/μg/hr $\times 10^{9}$, CHE_T and AChE; and $\times 10^{11}$, ChAc, using acetylcholine 3×10^{-3}M, acetyl-β-methyl choline 3×10^{-3}M and acetyl CoA $4{\cdot}65\times10^{-5}$M respectively.

1968). The distribution of cholinesterase (ChE) and AChE within the tissues was observed using fresh frozen sections stained by a modified thiocholine technique (Koelle, 1963).

Fig. 1 shows that the lowest levels of all three enzymes were found in sympathetic chain, whereas the greatest ChE_T and AChE activities were found in the stellate ganglion. Thiocholine staining showed that many of the cells of the stellate ganglion had high levels of ChE and AChE, but in contrast, the cells of the superior cervical ganglion had high levels of AChE but not ChE.

There appears to be no simple relationship between the levels of ChE, AChE and ChAc. These findings support the concept that the cell population is not homogeneous. The high levels of ChAc in some ganglia could reflect cholinergic sympathetic cells as described in the cat (Buckley, Consolo, Giacobini & Sjöqvist, 1967).

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