binding sites may be located on striatal perikarya.

A.J.C. and J.L.W. are MRC Students.

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Excitation of CA1 neurones of the rat hippocampus by the octacosapeptide, vasoactive intestinal polypeptide (VIP)

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Recently a number of authors have drawn attention to a number of peptides which not only have a hormonal role in the intestine but may have a neurotransmitter role at that site and in the brain (Bryant, Polak, Modlin, Bloom, Albuquerque & Pearse, 1976). Earlier in keeping with this hypothesis we were able to show that somatostatin applied to the cell bodies of CA1 and CA2 region of the rat hippocampus *in vitro* resulted in a strong excitation which was fast in onset and thus resembled that evoked by glutamate (Dodd & Kelly, 1978). Using the same preparation we now report that vasoactive intestinal polypeptide (VIP) also excites these neurones when applied in their vicinity by pressure injection from a small tipped micropipette. As shown in Figure 1 the excitation was accompanied by a large and abrupt depolarization. The depolarization was of sufficient intensity to cause inactivation of the spike generating mechanism. The associated fall in membrane resistance was large enough to completely suppress the smaller of the hyperpolarizing pulses used to test the membrane resistance and completely unbalanced the larger pulses.

These results confirm the earlier work of (Phillis, Kirkpatrick & Said, 1978) who showed iontophoretic applied VIP to excite spontaneously active cerebral neurones in rats and depolarize motoneurones in the toad spinal cord.

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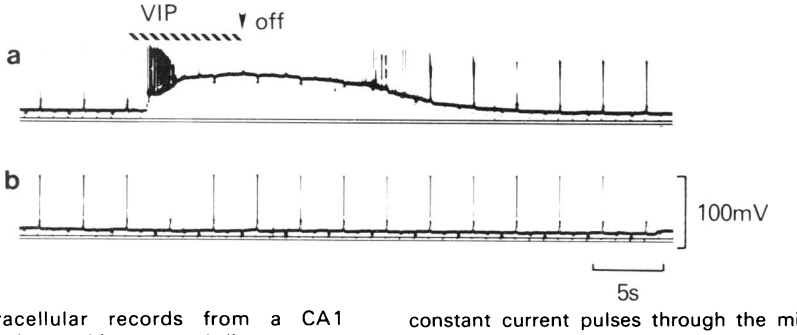

Figure 1 Intracellular records from a CA1 pyramidal neurone in a rat hippocampal slice preparation to show the depolarizing action of VIP. VIP was pressure injected into the vicinity of the dendrites with a pressure of 20 lbs/sq in from a fine micropipette with a tip diameter of 2 μm, containing a 0.3 mM solution of VIP dissolved in 100 mM sodium acetate. By repeatedly passing the same series of constant current pulses through the microelectrode into the cell, the excitability was tested by a depolarizing ramp every 3 s and the membrane resistance by means of both a large and a small hyperpolarizing square wave. Note the decrease in membrane resistance indicated by changes in the size and polarity of all three pulses during the depolarizing action of VIP.