2. When groups of rats were chronically, unilaterally bulbectomized, there was a specific, significant reduction in the tissue content of aspartate 2 days following surgery (from 2.92 ± 0.37 to 1.51 ± 0.17 μmole/g; $n = 6$) which was accompanied by a failure of LOT stimulation to release any of the amino acids.

These results differ from those of Bradford & Richards (1976) and of Yamamoto & Matsui (1976) who found that electrical stimulation of the LOT of guinea-pig olfactory cortex slices evoked a specific release of glutamate. This discrepancy could be the result of differences in stimulation frequency, perfusion temperature, incubation procedure and animal species used. Nevertheless, the present results suggest that some of the LOT fibres utilized aspartate as an exitatory transmitter whereas GABA is an inhibitory transmitter released from deeper lying fibre terminals.

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The release of amino acids and [^{3}H]-ACh from the rabbit retina *in vivo*

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When photoreceptors in the vertebrate retina are stimulated with light, horizontal cells and some bipolar cells respond by hyperpolarizing. These responses are believed to be due to a reduction in the release of a depolarizing transmitter from the photoreceptor terminals, and it has been suggested on electrophysiological evidence that aspartate may be this photoreceptor transmitter substance (Wu & Dowling, 1978).

In the present experiments, we have attempted to obtain further information on the photoreceptor transmitter by studying the effect of photic stimulation on the release of amino acids and [^{3}H]-ACh from the rabbit retina *in vivo*.

Rabbits were anaesthetized with urethane and in each experiment one eye was sutured to a ring for support. The cornea, iris, lens and vitreous were then removed and the resulting 'eye-cup' was filled with Krebs bicarbonate Ringer containing [^{3}H]-choline (10 μM, 13 Ci/mmol). After 30 min, the retina was irrigated with fresh medium containing eserine (30 μM) for 60 min and then 0.4 ml of medium containing eserine was placed in the eye-cup. This medium was replaced at 10 min intervals and the [^{3}H]-ACh in the resulting samples was determined as described previously (Massey & Neal, 1978). The amino-acids in the samples were measured using a radiochemical dansyl derivative technique (Clark & Collins, 1976). The retina was stimulated with flashes of light from a Devices photic stimulator and the physiological response of the retina was assessed during the experiments by recording the electro-retinogram (erg).

Stimulation of the dark-adapted retina for 10 min with flashes of light (3 Hz, average retinal illuminance 7.6 lux) reduced the release of aspartate from a spontaneous resting release of 143 ± 32.1 to 51.4 ± 13.6 p-mole/10 min (mean ± s.e. mean of 5 experiments, $P<0.05$). In contrast, the release of taurine was increased more than four fold, the resting release of 293 ± 51.9 being increased to 1321 ± 436 p-mole/10 min (mean ± s.e. mean of 5 experiments, $P<0.01$). The release of GABA, glutamate, alanine, glutamine and glycine were unaltered by photic stimulation.

In the same experiments, the release of [^{3}H]-ACh from the retina was increased to 4.1 ± 0.29 ($P<0.01$) times the spontaneous resting release by flashes of light. This light evoked release of [^{3}H]-ACh had previously been shown to be calcium dependent and to be maximal at a stimulus frequency of 3 Hz (Massey & Neal, 1978).

These experiments support the suggestion that aspartate may be the photoreceptor transmitter, since it alone showed a reduced efflux in response to light flashes. Conversely, the increase in release of ACh and taurine in response to photic stimulation suggest their role in the retina is not that of the photoreceptor transmitter substance.

S.C.M. is an SRC student.

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