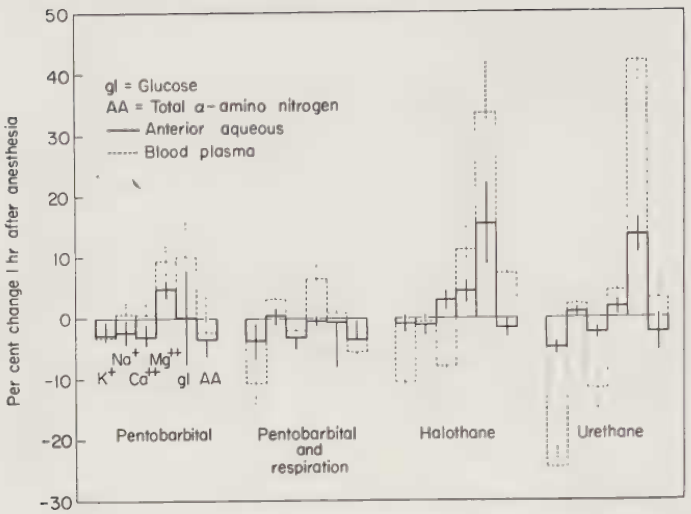

FIG. 5. The effects of general anaesthesia on the chemical composition of blood plasma (– – –) and aqueous humour (——). In general, changes in aqueous humour composition were in the same direction, but smaller in extent than changes in blood plasma concentration (cf. Bito and Eakins, 1977; see also text). Values represent the mean percent change obtained on six rabbits; for each anaesthetic, aqueous from one eye was obtained directly before, and from the other 1 hr after the induction of anaesthesia. Limits represent ±1 S.E. of the mean.

Diabetes

In addition to the obvious periodic increase in IOF glucose concentration occurring in diabetes, alloxan diabetes in rabbits was shown to reduce the penetration of [^{14}C]cycloleucine into the anterior and posterior chambers and to cause a large reduction in the concentration of most naturally occurring amino acids in the anterior aqueous (Reddy and Kinsey, 1963). Significant alterations in the phospholipid composition of the aqueous were also found (Varma and Reddy, 1972).

It may be noted that elevated vitreal lactic acid concentration was postulated (Imre, 1964) to be a vasoproliferative factor responsible for diabetic retinopathy, although it appears that measurements of lactic acid concentration in the vitreous of diabetic animals or patients were not made. This claim has not been substantiated, but it is likely that if a vasoproliferative factor plays a role in diabetic retinopathy, it would be present in the vitreous as well as in the retina since, as discussed above, there is no effective permeability barrier between these two compartments.

Inflammation

Acute uveitis, or the intracameral or topical application of inflammatory agents results in the accumulation of prostaglandins in the aqueous, a "breakdown" of the blood-aqueous barrier, and an elevated protein level in the anterior chamber (cf. Eakins, 1977). Other autacoids can also be expected to accumulate in the aqueous, especially when there is a cellular infiltration of the anterior chamber. Recent experiments indicate that the ascorbic acid concentration of the aqueous remains significantly reduced, and the ability of the iris-ciliary body complex to actively accumulate