

## Interaction of Ficoll with Bovine Disc Membranes.

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The rod outer segment, the light sensitive part of the rod photoreceptor, consists of a stack of several hundreds of discs enclosed by a plasma membrane. In distilled water, the plasma membrane ruptures and the osmotically intact discs swell to nearly spherical structures (1). Due to the high buoyancy of swollen discs, osmotically intact discs can be isolated by flotation at 80000 g in 5% Ficoll 400 dissolved in water (1). Upon increasing successively the osmolarity of the Ficoll solution, the amount of floating discs decreases, approaching zero for high osmolarities. This decrease is due to shrinkage of the discs which reduces the buoyancy of the discs.

We determined the critical osmolarity,  $P_{1/2}$ , where the amount of floating discs reaches half of its maximal value. This value is expected to be independent of the duration of the disc exposure to Ficoll if Ficoll is an inert flotation medium. In 5% Ficoll, however,  $P_{1/2}$  was found to increase significantly with the length of time during which the discs were exposed to Ficoll (Fig. 1). This finding strongly indicates that at this Ficoll concentration Ficoll interacts with bovine disc membranes.

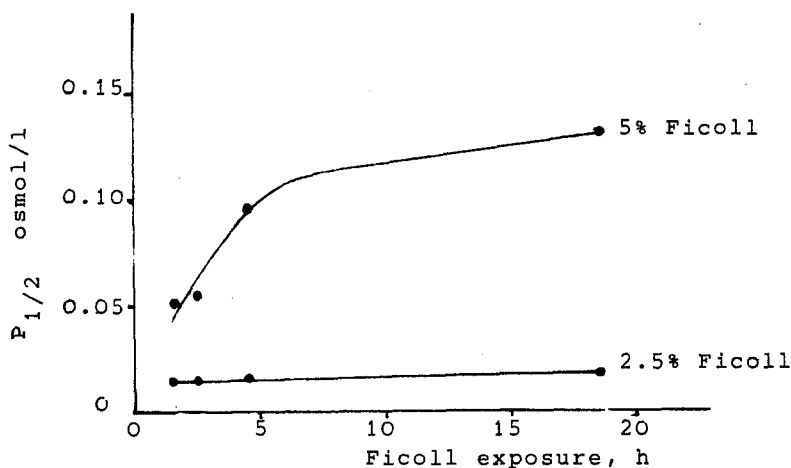


Fig. 1 Dependence of the critical osmolarity for disc flotation,  $P_{1/2}$ , on the duration of the Ficoll exposure.

Osmotically intact discs could also be floated in 2.5% Ficoll. Then,  $P_{1/2}$  was smaller than in 5% Ficoll. Furthermore, no dependence of  $P_{1/2}$  on the Ficoll exposure time was observed indicating that no appreciable interaction between Ficoll and disc membranes takes place at this Ficoll concentration. It is concluded that the isolation of osmotically intact discs in 2.5% Ficoll is superior to the isolation in 5% Ficoll.

(1) H.G. Smith et al. (1975), Exp. Eye Res. 20, 211