

diphloretin phosphate (DPP, 5-10 $\mu\text{g/ml}$) but not by 7-oxa-prost-13-ynoic acid (1-10 $\mu\text{g/ml}$), the latter sometimes being spasmogenic. In these respects, the responses of the uterus both to GABA and to PGE_1 were 'atypical'.

The Demonstration consists mainly of records illustrating these statements.

We wish to thank Professor D.A. van Dorp for the PGE_1 , Professor J. Fried for the 7-oxa-prost-13-ynoic acid, and Professor A.H. Jackson for the preparation of bicuculline methochloride.

References

- CLEGG, P.C., HALL, W.J. & PICKLES, V.R. (1966). The action of ketonic prostaglandins on the guinea-pig myometrium. *J. Physiol., Lond.*, **183**, 123-144.
- FLOREY, E. & McLENNAN, H. (1959). The effects of Factor I and of gamma-aminobutyric acid on smooth muscle preparation. *J. Physiol.*, **145**, 66-76.
- HOBBIGER, F. (1958). Effects of γ -aminobutyric acid on the isolated mammalian ileum. *J. Physiol.*, **142**, 147-164.

A superfusion system used for loading and washing out ^{45}Ca from frog ventricular strips

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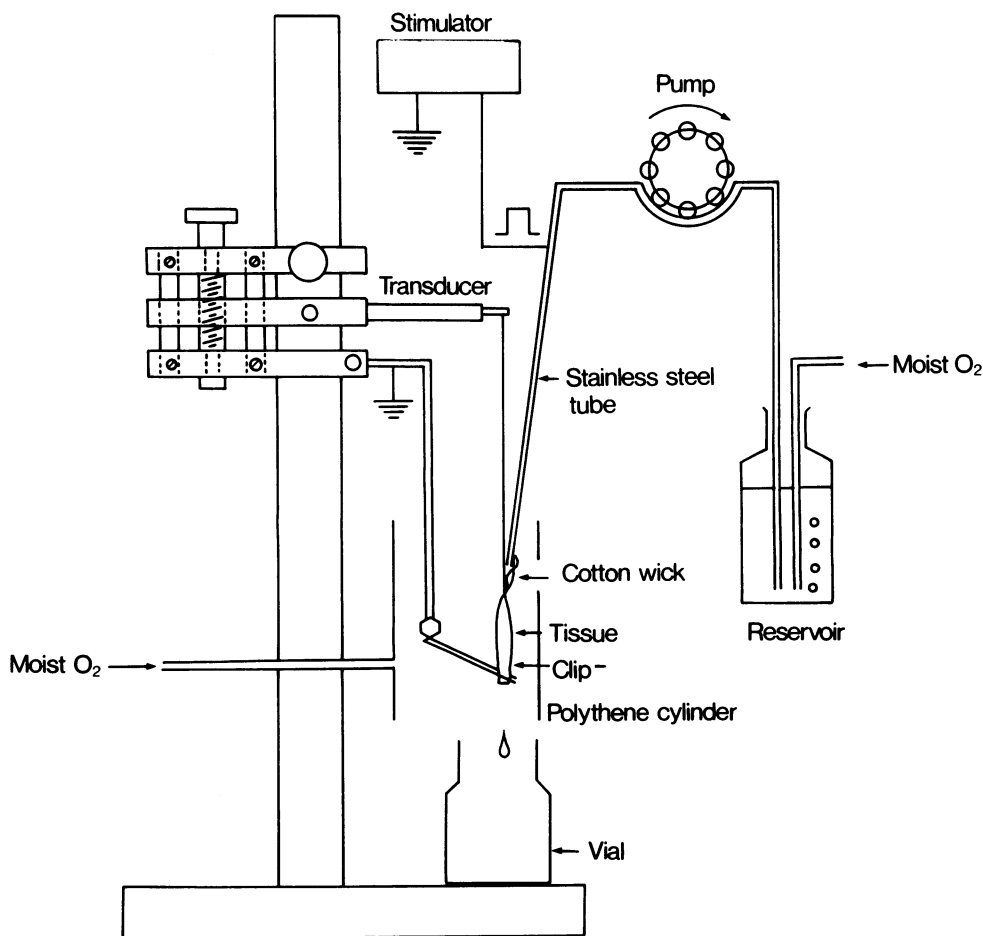


Figure 1 Diagram of superfusion system not drawn to scale. A separate recirculating circuit was used for superfusion with radioactive loading solution.

Techniques available for investigating radioisotope effluxes from isolated muscles include those of sequential dipping and continuous flow. The former have the disadvantage that the tissue is subjected to repeated changes in its environment, and that dipping produces artifacts on any mechanical record. Continuous-flow systems may give rise to large volumes of effluent solution if washing is to be effective.

Our system has the following advantages. It is simple and lends itself to paired studies. The muscle is in a constant environment and its mechanical activity can be recorded. The flow of washing solution is minimized, while effective washing is assured.

The preparation was a strip of 1-1.5 mm diameter, cut from the ventricular wall of *Rana temporaria* and mounted in the apparatus as shown in Figure 1. The lower end of the strip was clipped, while the upper end was attached by thread to an E.E.L. 2.S.T.02 force transducer. The strip was superfused with frog Ringer solution

applied via a stainless steel tube and cotton wick, which also served as one stimulating electrode. Stimulation frequencies of 0.25-0.5 Hz were used. Ringer solution drained from the preparation at 0.25-0.5 ml/min into waste (equilibration), recirculating reservoir of ^{45}Ca -labelled Ringer (loading), or collecting vials (wash-out).

The preparation, at room temperature, was in an atmosphere enriched with moist O_2 , and proved to be viable for long periods. It was possible to record its mechanical activity during equilibration, loading and wash-out. Superfusing solutions could be changed during wash-out without mechanical artifacts by transferring the solution intake tube quickly into a fresh reservoir.

Sufficient points could be obtained to construct accurate efflux curves, and detect rapid changes in the rate of efflux. With this system, we have shown transient increases in efflux rate with increases of the sodium/calcium concentration ratio in the medium, or addition of $5\text{-}10\text{ mM La}^{3+}$.