along with the common calcium requirement of exocytoxic processes, could indicate depression of calcium influx. Such an action might also explain other effects of cytochalasin (Wessels *et al.*, 1971).

REFERENCES

DOUGLAS, W. W., NAGASAWA, J. & SCHULZ, R. (1971). Electron microscopic studies on the mechanism of secretion of posterior pituitary hormones and significance of microvesicles ("synaptic vesicles"): Evidence of secretion by exocytosis and formation of microvesicles as a by-product of this process. *Mem. Soc. Endocrin.*, **19**, 353–378.

LACY, P. E., HOWELL, S. L., YOUNG, D. A. & FINK, C. J. (1968). New hypothesis of insulin secretion. *Nature*, **219**, 1177–1179.

NAGASAWA, J., DOUGLAS, W. W. & SCHULZ, R. A. (1971). Micropinocytotic origin of coated and smooth microvesicles ("synaptic vesicles") in neurosecretory terminals of posterior pituitary glands demonstrated by incorporation of horseradish peroxidase. *Nature*, **232**, 341–342.

POISNER, A. M. & BERNSTEIN, J. (1971). A possible role of microtubules in catecholamine release from the adrenal medulla: Effect of colchicine, vinca alkaloids and deuterium oxide. *J. Pharmacol. Exp. Ther.*, **177**, 102–108.

SCHOFIELD, J. G. (1971). Cytochalasin B and release of growth hormone. *Nature, New Biology*, **234**, 215–216.

UTTENTHAL, L. O., LIVETT, B. G. & HOPE, D. B. (1971). Release of neurophysin together with vasopressin by a Ca^{2+} dependent mechanism. *Phil. Trans. Roy. Soc. Lond. B.*, **261**, 379–380.

WESSELS, N. K., SPOONER, B. S., ASH, J. F., BRADLEY, M. P., LUDUENA, M. A., TAYLOR, E. L., WRENN, J. R. & YAMADA, K. M. (1971). Microfilaments in cellular and developmental processes. *Science*, **171**, 135–143.

Properties of a new prostaglandin

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It has been shown that PGA_1 and PGA_2 slowly lose their depressor activity during incubation with blood plasma of the cat. This has been attributed to an enzymic conversion of the PGA to its biologically-inactive isomer, PGB (Jones, 1970; Horton *et al.*, 1971). Further studies have established that the enzyme system, which has provisionally been given the name prostaglandin isomerase, causes a single shift of the 10,11 double bond of PGA_1 to produce the 9-oxo-11,13-diene isomer (Fig. 1). This new prostaglandin has been designated PGC_1. It is unstable, isomerizing to PGB_1 under mild alkaline conditions (>pH 7).

The isolation of small quantities of PGC_1 and PGC_2, free from the corresponding PGA and PGB, has been achieved. Initial observations indicated that these compounds were highly active depressor agents in the cat and dog. A more detailed investigation of the depressor effects in comparison with several other prostaglandins were therefore carried out. When injected rapidly into the thoracic aorta of the pentobarbitone-anaesthetized cat, prostaglandins E_1 (20 ng/kg) and B_1 (2 μg/kg) elicit smooth falls in diastolic B.P. which on average reach a maximum 15 sec after injection and have decreased to two-thirds maximum after 35 sec. PGC_1 (50 ng/kg) produces a more prolonged fall in B.P., reaching a maximum after 45 sec and declining to two-thirds maximum in 125 sec. In contrast, the response to PGA_1 (100 ng/kg) is biphasic; the initial fall in pressure reaches a maximum 15 sec after injection and is followed by a prolonged and more pronounced fall with a maximum at 85 sec.

By comparing the falls in B.P. 15 sec after injection, estimates of the potencies of the prostaglandins have been made. Relative to PGE_1 (=100), PGA_1, PGB_1 and PGC_1 have potencies of 16, 0·9 and 44 respectively. Similarly, PGA_2, PGB_2 and PGC_2 possess 16, 1·2 and 47% of the activity of PGE_2.

The biphasic action of PGA_1 and PGA_2 in the cat has been reported previously (Kannegiesser & Lee, 1971). A possible explanation arising from this study is that the injected PGA is rapidly converted by prostaglandin isomerase in the plasma to the corresponding PGC, a compound which has 3-fold greater depressor activity than its precursor. Experiments using tritium-labelled PGA_1 have shown that the half-life of PGA_1 in cat blood *in vitro* is less than 30 sec at 37°C.

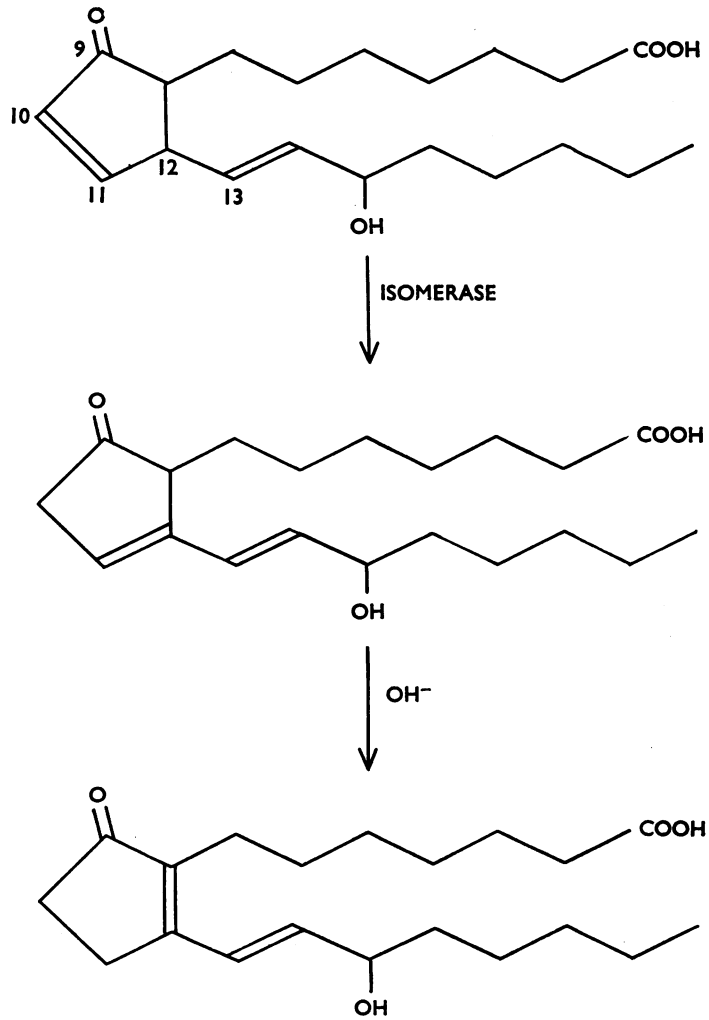

FIG. 1. Conversion of PGA_1 to PGC_1 by prostaglandin isomerase and base-catalysed isomerization of PGC_1 to PGB_1.

REFERENCES

HORTON, E. W., JONES, R. L., THOMPSON, C. J. & POYSER, N. L. (1971). Release of prostaglandins. *Ann. N.Y. Acad. Sci.*, **180**, 351–362.

JONES, R. L. (1970). A prostaglandin isomerase in cat plasma. *Biochem. J.*, **119**, 64–65*P*.

KANNEGIESSER, H. & LEE, J. B. (1971). Difference in haemodynamic response to prostaglandins A and E. *Nature, Lond.*, **229**, 498–500.