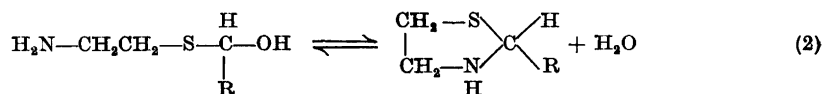
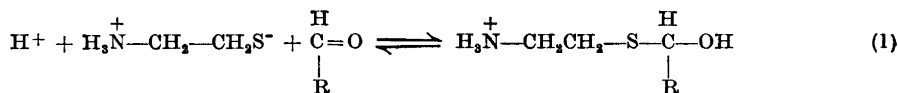


obtained, even when a large excess of cysteamine was used. Over a wide pH range (1.4—8.3) the observed reaction rate paralleled the concentration of the ionized thiol ($pK_{SH}=8.6$), which constitutes evidence that in this reaction thiol is indeed the reactive molecular species. It also demonstrates that, in the pH range studied, no marked proton activation of the carbonyl group takes place. At pH 7.4 and 37 °C the radioactivity of the labeled product did not decrease when an excess of non-labeled cysteamine was added.

On the basis of the above data the following reaction mechanism is suggested:



Since the formation of cyanohydrins, acetals and bisulphite addition products are known to be reversible³, reaction 1 would similarly be expected to be reversible. The fact that the formation of the product appears as a one-way reaction, can be explained by assuming that reaction 2 is faster than reaction 1 and is displaced to the right.

The rate of interaction of cysteamine with cortisone was found to be negligible at pH 7.4 and 37 °C. However, significant reaction rates

were found with glyceraldehyde, methylglyoxal⁴, dihydroxyacetone and α -ketoglutaric acid. The rate constants

$k = \frac{[Product]}{[RS^-][R'-CO-R]} \text{ min}^{-1} \times M^{-1} \times (10^3)$ were 2.5, 1.2, 0.2 and 0.01 respectively.

Since streptomycin is known to be inactivated by cysteamine and cysteine⁵, it is of interest that cysteine was found to react stoichiometrically with streptomycin at a fairly rapid rate, whereas no interaction was observed with dihydrostreptomycin. This latter finding indicates that the reaction takes place at the carbonyl group of streptomycin.

1. Eldjarn, L. and Pihl, A. *Acta Chem. Scand.* **10** (1956) 1054.
2. Eldjarn, L. and Pihl, A. *J. Biol. Chem.* **225** (1957) 499.
3. Bartlett, P. D. in *Organic Chemistry* **3**, John Wiley & Sons, Inc. New York 1953, p. 1.
4. Franzen, V. *Angew. Chem.* **11** (1956) 381.
5. Denkelwater, R., Cook, M. A. and Tishler, M. *Science* **102** (1945) 12.

The Isolation of Prostaglandin

S. Bergström and J. Sjövall

Department of Physiological Chemistry, University of Lund, Lund, Sweden

The presence of a smooth muscle stimulating factor in sperm and in extracts of the accessory genital glands of man and certain animals was demonstrated by Goldblatt¹ and von Euler². A concentrate of the factor from sheep prostate gland was prepared by von Euler³ who studied some of its chemical properties.

Some preliminary data on the further purification of this concentrate have been published⁴.

We have succeeded in isolating one "prosta-

glandin" factor (PGF) in crystalline form. The compound (102°—103°) is an unsaturated hydroxyacid, that does not contain nitrogen. A good response is obtained on a rabbit's duodenum at a concentration of $\sim 5 \times 10^{-9}$ g per ml.

At least one other active acidic factor is present in sheep prostate glands.

The isolation procedure and some of the properties of the pure compound will be discussed.

1. Goldblatt, M. W. *Chemistry & Industry* **52** (1933) 1056.
2. von Euler, U. S. *Arch. exper. Pathol. Pharmacol.* **175** (1934) 78.
3. von Euler, U. S. *Scand. Arch. Physiol.* **81** (1939) 65.
4. Bergström, S. *Nord. Med.* **42** (1949) 1465.