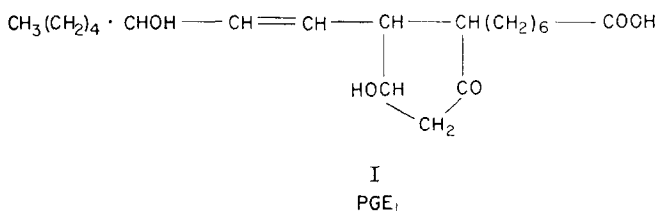


PROSTAGLANDINS—A GROUP OF HORMONAL COMPOUNDS OF WIDESPREAD OCCURRENCE

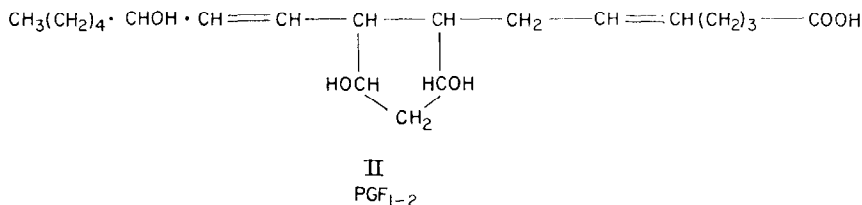
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THE smooth muscle stimulating activity of the "prostaglandin" present in sperm plasma of man and sheep and in extracts of the vesicular gland of sheep,¹⁻³ has recently been found to be due to several related compounds.⁴⁻⁹ The compound first isolated in pure form from glandula vesicalis of sheep, "PGE₁", has been found to have the structure shown below (I) and recently two related compounds were isolated, PGE₂ and PGE₃, that contain respectively one and two additional double bonds.^{4, 5} PGE₁ and PGE₂ have also been isolated from human seminal plasma⁶ and the absolute steric configuration has been determined.⁷



Bergström *et al.* also observed smooth muscle stimulating activity in the acidic fraction of the lipid extract from normal lungs of sheep and pigs. The purification of these factors has led to the isolation of the same new compound from both sources which have proved to be related to the prostaglandins mentioned above and in the following. When the different prostaglandins PGE₁, PGE₂ and PGE₃ are reduced with sodium borohydride each yields two isomeric trihydroxy compounds⁵ designated PGF_{1-x} and PGF_{2-x}* of which the former isomer in each case had slightly higher smooth muscle stimulating potency on rabbit duodenum than the parent compound, and the latter considerably less. It has been found that the factor isolated from normal lungs is identical with the more active of the two reduction products of PGE₂ and can thus in this preliminary nomenclature be called PGF₁₋₂ with the structure shown below (II).⁸



* The additional subindex ($x = 1, 2$ or 3) refer to the parent E-compound.

The studies of the biological properties of the factor isolated from swine lungs were started with concentrates before the pure compound was available, but the effects reported here are all due to this factor alone

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