SHIRLEY JOHNSON MEMORIAL LECTURE

PROSTAGLANDIN ENDOPEROXIDES AND THROMBOXANES: ROLE IN PLATELETS

Benut Samuelsson, Department of Chemistry, Karolinska Institutet, S-104 01 Stockholm, Sweden.

Two groups of unstable (t½/2-5 min) endoperoxides, PGG and PGH compounds, have been isolated and shown to be precursors of the prostaglandins. The endoperoxides cause platelet aggregation and contract vascular and air way smooth muscle.

A new group of compounds (thromboxanes) derived from the endoperoxides has been discovered. A highly unstable (t½/2=30-40 sec) intermediate, thromboxane A₂, between the endoperoxides and thromboxane B₂ has been detected. Structural work indicates that it has a bicyclic oxane-oxetane structure. Thromboxane A₂ is a potent aggregating agent with pronounced effects on vascular smooth muscle. Studies on the mechanisms of actions of the endoperoxides and thromboxanes in human platelets will be discussed.