Anti-Inflammatory Effects of The Chloroform Extract of Annona muricate Leaves on Phospholipase A2 and Prostaglandin Synthase Activities

Oyekachukwu, A. R., Elijah, J. P., Eshu, O. V. and Nwodo, O. F. C. (2017). Anti-Inflammatory Effects of The Chloroform Extract of Annona muricate Leaves on Phospholipase A2 and Prostaglandin Synthase Activities. *Translational Biomedicine*, 8(4), 137.

Abstract:

This study ascertained the mechanisms of the anti-inflammatory activity of the total lipid (chloroform) extract of Annona muricata leaves. The plant material was extracted with a mixture of chloroform and methanol (2:1) and partitioned with 0.2 volume water. The chloroform extract was investigated for its effect on the in vitro activities of phospholipase A2, prostaglandin synthase and membrane stabilization. The extract significantly ($p < 0.05$) inhibited phospholipase A2 activity in a concentration-related manner compared to the control, with a range of 0.2 - 0.6 mg/ml inhibiting the enzyme activity by 23.91 - 43.48%. Effect of the extract on prostaglandin synthase activity showed a significant ($p < 0.05$) inhibition of enzyme activity at the doses 0.1, 0.5 and 1.0 mg/ml compared to the control. The highest percentage inhibition (87.46%) attained at 0.5 mg/ml was comparable to that of 1.0 mg/ml indomethacin. At various concentrations (0.1-0.8 mg/ml), the chloroform extract also significantly ($p < 0.05$) inhibited heat and hypotonicityinduced haemolysis of human red blood cells (HRBCs) compared to the control. The highest percentage inhibition of heat-induced haemolysis (53.03%) was obtained at 0.4 mg/ml of the extract while the highest percentage inhibition of hypotonicity-induced haemolysis (77.91%) was obtained at 0.8 mg/ml. This study thus confirmed that the mode of action of this extract of Annona muricate leaves on inflammation could be through the inhibition of phospholipase A2 and prostaglandin synthase activities and by membrane stabilization.

Keywords: Annona muricata; Anti-inflammatory; Phospholipase A2; Prostaglandin synthase; Membrane stabilization; HRBCs: Human Red Blood Cell Membranes