Inhibitory Action of Phenylpropanoids on Phospholipase A2 and Phosphodiesterase in Athmatic Guinea Pig Lung

Kim YounJoung°, Lee JiYun, Lee JinHee, Kim TaeDoo, Sim SangSoo, Kim ChangJong

Department of Pathophysiology, College of Pharmacy, Chung Ang University

Effect of phenylpropanoids on Phospholipase A2 (PLA2) and phosphodiesterase (PDE) activities in the asthmatic lung tissue were studied in guinea pigs. Bronchial asthma were introduced by the challenge of aerosolized ovalbumin (OA) in the double-chambered plethysmograph at twenty one days after sensitization of OA in guinea pigs. Bronchoalveolar lavage fluids (BALF) were taken by brochalveolar lavage with HEPES buffer. Drugs were orally administered one day before antigen challenge. Asthmatic lung tissue were homogenized and centrifuged. Crude phosphadiesterase (PDE) in the supernatant of homogenized lung tissue were precipitated by 70 % (NH4)2SO4 and purified by the dialysis into HEPES buffer for 18 hours. PLA2 activity were determined by the spectrofluorometric analysis. It shows that all of phenylpropanoids have the concentration-dependently inhibitory activity of PDE and PLA2 activities at the concentration of 10 uM, but quinic acid at 30uM. Caffeic acid, sinapinic acid, ferulic acid, chlorogenic acid, coumaric acid and cinnamic acid at the concentration of 10 uM inhibited significantly PDE activity as compared with control ($p<0.01$), but these activity have less than that of prednisolone acetate. Sinapinic acid, ferulic acid and chlorogenic acid at a dose of 12.5 mg/kg inhibited significantly PLA2 activity in BALF as compared with control ($p<0.01$), but their activity have less than that of dexamethasne or disodium cromoglycate. These results indicated that the more methoxy or hydroxyl radical in benzene ring of phenylpropanoids have, the more inhibitory activity of PLA2 activity.

[PB2-3] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Inhibitory Action of Phenylpropanoids on Histamine Release from Rat Peritoneal Mast Cells

Lee JinHee°, Lee JiYun, Kim YounJoung, Kim TaeDoo, Yoon MiYun, Sim SangSoo, Kim ChangJong

Department of Pathophysiology, College of Pharmacy, Chung Ang University

Phenylpropanoids originating from vegetable kingdom have some biological activity. In this experiments, effect of phenylpropanoids on the histamine release from mast cells were studied in vitro. Rat peritoneal mast cells were isolated by the discontineous gradients of Percoll and their histamine release by stimulation of compound 48/80 and A23187 at a concentration of 6.0 ug/ml were determined. It shows that all of phenylpropanoids have generally the significantly inhibitory action on the histamine release from rat peritoneal mast cells, as it were, phenylpropanoids inhibited the anaphylactic, type I, hypersensitivity. Caffeic acid, ferulic acid and coumaric acid at the concentration of 10 uM, sinapinic acid, coumaric acid, quinic acid and cinnamic acid at the concentration of 30 uM, and chlorogenic acid at the concentration of 100 uM, inhibited significantly the histamine release of mast cells by stimulation of compound 48/80 and A23187 as compared with control ($p<0.01$). Caffeic acid has the most active. These results showed that the more hydrogen or hydroxyl radical in benzene ring of phenylpropanoids have, the more inhibitory activity on the release of histamine of mast cells have.

[PB2-4] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Inhibitory Action of Phenylpropanoids on Delayed Types Hypersensitivity and Rosette Forming Cells