European Journal of Pharmaceutical Sciences, 16, 201-208 (2002).

Differential interaction of Sophora isoflavonoids with lipid bilayers

Andrzej B. Hendrich[1], Rafal Malon[1], Andrzej Pola[1], Yoshiaki Shirataki (白瀧　義明)[2], Noboru Motohashi[3] and Krystyna Michalak[1]

[1]Department of Biophysics, Wroclaw Medical University, PL-50368 Wroclaw, Poland; [2]Faculty of Pharmaceutical Sciences, Josai University, 1-1 Keyakidai, Sakado, Saitama 350-0295, Japan; [3]Department of Medicinal Chemistry, Meiji Pharmaceutical University, Kiyose, Tokyo 204-8588, Japan

The mechanisms of some biological effects exerted by flavonoids may involve their interactions with lipid bilayers. We found that isoflavones substituted with one or two prenyl groups less effectively induce liposome aggregation than more polar ones, possessing no prenyl groups. On the basis of observed effects we conclude that prenyl-substituted isoflavones penertrate deeper into the lipid bilayer while more polar ones act closer to the membrane surface. Comparing our results with biological tests it seems that interactions with the hydrophobic core of membranes are responsible for the activity of the sudied isoflavones.