

were assessed with water, orange juice, and carbohydrates (12.5 ml/kg over 30 min) and with acetic acid (0.1 M, pH 3.44). Orange juice significantly increased the area under the curve (0–150 min) of pravastatin in rats. Results shows that Orange juice had no effects on the pharmacokinetic parameters of intravenously administered pravastatin in rats. Carbohydrates and acetic acid with pH and concentration equivalent to those of orange juice also resulted in no statistically significant differences in pravastatin pharmacokinetic parameters in rats. Orange juice significantly increased *oatp1* and *oatp2* mRNA and protein in the intestine of rats. Orange juice significantly increased the area under the curve (0–240 min) of pravastatin in healthy volunteers.(Yu Koitabashi, *et al.*. 2006).

Orange juice found to interfere with the gastrointestinal absorption of atenolol. Orange juice decreased the mean peak plasma concentration (C max) of atenolol by 49% ($P < 0.01$), and the mean area under the plasma atenolol concentration–time curve (AUC_{0-33 h}) by 40% (range 25–55%, $P < 0.01$). The amount of atenolol excreted into urine was decreased by 38% (range 17–60%, $P < 0.01$).(J. J. Lilja, *et al.*. 2005).

Concomitant use of Orange juice and celiprolol leads to inhibition of celiprolol intestinal absorption, this inhibition referred to Hesperidin, an ingredient of orange juice, The pharmacokinetic interaction between celiprolol and orange juice was characterized through in vivo experiments with rats. Celiprolol 5 mg/kg was injected into the rat duodenum together with 5 ml/kg of neutralized orange juice. Plasma celiprolol concentrations were measured by liquid chromatography-electrospray ionization-mass spectrometry (LC-ESI-MS). Concomitant administration of orange juice with celiprolol significantly decreased the area under the plasma concentration-