Fruit Juices influence on drug action

Among all fruit juices, grape fruit juice (GFJ) possesses high interaction with almost all types of drugs. The juice modifies the body's way of metabolizing the medication, affecting the liver's ability to work the drug through a person's system. Taniguchi in 2007 reported a case of purpura associated with concomitant ingestion of cilostazol, aspirin and grapefruit juice in 79 years old man. His purpura disappeared upon cessation of grapefruit juice, although his medication was not altered. The most probable cause of his purpura is an increase in the blood level of cilostazol because of the inhibition of cilostazol metabolism by components of grapefruit juice; Taniguch.[9]

Numerous reports have documented drug interactions with GFJ that occur via inhibition of CYP3A enzymes.[10] Furanocoumarins present in GFJ inhibit the intestinal CYP 3A4 and have been shown to increase the oral bioavailability of medications that are CYP 3A4 substrates like Felodipine, midazolam, cyclosporine and raise their concentrations above toxic levels.[11]

GFJ is generally contraindicated to patients taking psychotropics and it is advised to inform patients about described interaction.[12] The in vitro data suggest that compounds present in grapefruit juice are able to inhibit the P-gp activity modifying the disposition of drugs that are P-gp substrates such as talinolol.[13] The overall exposure of some drugs can be increased by more than fivefold when taken with GFJ and increase the risk of adverse effects.[14]

With new anticonvulsants, serum iron and sodium need to be monitored. Additionally, users are advised to avoid drinking grape fruit juice within 1-2 hr(s) of taking these anticonvulsants.[15] Furanocoumarines and active bioflavonoids present in GFJ are also inhibitors of OATP and when ingested concomitantly, can reduce the oral bioavailability of the OATP substrate, fexofenadine.[16] Overall, a series of flavonoids present in GFJ are identified as esterase inhibitors, of which kaempferol and naringenin are shown to mediate pharmacokinetic drug interaction with most of the calcium channel antagonist and the statin groups of drugs such as enalapril and lovastatin due to their capability of esterase inhibition.[17]

Cholesterol-lowering agent lovastatin should be taken with food to enhance gastrointestinal absorption and bioavailability. The absorption of rosuvastatin, another anti-hyper lipidemic agent, was significantly decreased in the fed state compared with the fasting state, which suggests that rosuvastatin should be administered on an empty stomach.[18]

Simvastatin, Ezetimibe, pravastatin and fluvastatin may be taken without regards to food. However, high fiber diets may lower the efficacy of these drugs.[19] Concomitant administration of statins with food may alter statin pharmacokinetics or pharmacodynamics, increasing the risk of adverse reactions such as myopathy or rhabdomyolysis or reducing their pharmacological action. Consumption of pectin or oat bran together with Lovastatin reduces absorption of the drug, while alcohol intake does not appear to affect the efficacy and safety of Fluvastatin treatment.[20]