Clinical Pharmacology
& Biopharmaceutics

Editorial Open Acces

Most importantly, piperine inhibits P-gp and CYP3A4 that are expressed in enterocytes of the gut wall and hepatocytes of the liver that contribute to a major extent of pre-systemic elimination of many drugs resulting in poor bioavailability. Sinomenine, another alkaloid extracted from Sinomenium acutumumb, was reported to enhance the bioavailability of a monoterpene glucoside used for in ammation and arthritis. e underlying mechanism of this e ect was speci c inhibition P-gp transporters responsible for e ux [12]. Quercetin is a plant derived avonoid that is found mainly in citrus fruits, vegetables, leaves, and grains that has been reported to enhance the bioavailability of various drugs including, pioglitazone, diltiazem, digoxin, and epigallocatechin-3-gallate (EGCG) [13,14]. It exhibited the bioenhancing property by inhibition of CYP3A4 enzymes and/or P-gp and MDR transporters.

Naringin, a avonoid glycoside found in grapefruit, apples, onions, and tea also act by the inhibition of CYP3A4, CYP3A1/2, and P-gp and enhanced bioavailability of various drugs including diltiazem, verapamil, paclitaxel, etc. in vivo [15-18]. Genistein, an intense phytoestrogen, is an iso avone avonoid found in dietary plants such as soybean and kudzu (Glycine max and Pueraria lobata). It exhibits its bioenhancing properties on various drugs including paclitaxel and EGCG through inhibition of CYP3A, P-gp, MRP2, and BCRP transporters [19]. Although this bioenhancer could be used with anticancer drugs given its e ux transporter and CYP enzyme inhibitiory acti[2h.ion of

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Citation: Shanmugam S