Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing Link "URL"
1	Oral Genistein-loaded Phytosomes with Enhanced Hepatic Uptake, Residence and Improved Therapeutic Efficacy against Hepatocellular Carcinoma	Pharmaceutics	Genistein (Gen) is one of the most potent soy isoflavones used for hepatocellular carcinoma (HCC) treatment. Low aqueous solubility and first-pass metabolism are the main obstacles resulting in low Gen oral bioavailability. The current study aims to introduce phytosomes as an approach to improve Gen solubility, protect it from metabolism by complexation with phospholipids (PL), and get used to PL in Gen lymphatic delivery. Different forms of PL namely: Lipiod® S100, Phosal® 53 MCT, and Phosal®75 SA were used in phytosomes preparation GP, GPM, and GPL respectively. The effect of formulation components on Gen absorption, metabolism, and liver accumulation was evaluated following oral administration to rats. Cytotoxicity and cellular uptake studies were applied on HepG2 cells and *in-vivo* anti-tumor studies were applied to the DEN-mice model. Results revealed that GP and GPL remarkably accumulated Gen aglycone in hepatic cells and minimized the metabolic effect on Gen. They significantly increased the intracellular accumulation of Gen in its complex form in HepG2 cells. Their cytotoxicity is time-dependent according to the complex stability. The enhanced *in-vivo* anti-tumor effect was observed for GP and GPL compared to Gen suspension on DEN-induced HCC in mice. In conclusion,	2021	https://doi.org/10.1016/j.ijpharm.2021.120564

			Gen-phytosomes can represent a promising approach for liver cancer treatment.		
2	Effective Cellular Transport of Ortho-Halogenated Sulfonamide Derivatives of Metformin Is Related to Improved Antiproliferative Activity and Apoptosis Induction in MCF-7 Cells	Molecular medicine	Metformin is a substrate for plasma membrane monoamine transporters (PMAT) and organic cation transporters (OCTs); therefore, the expression of these transporters and interactions between them may a_ect the uptake of metformin into tumor cells and its anticancer efficacy. The aim of this study was to evaluate how chemical modification of metformin scaffold into benzene sulfonamides with halogen substituents (compounds **1**–**9**) may a_ect affinity towards OCTs, cellular uptake in two breast cancer cell lines (MCF-7 and MDA-MB-231) and antiproliferative efficacy of metformin. The uptake of most sulfonamides was more efficient in MCF-7 cells than in MDA-MB-231 cells. The presence of a chlorine atom in the aromatic ring contributed to the highest uptake in MCF-7 cells. For instance, the uptake of compound **1** with o-chloro substituent in MCF-7 cells was 1.79 _ 0.79 nmol/min/mg protein, while in MDA-MB-231 cells, the uptake was considerably lower (0.005 _ 0.0005 nmol/min/mg protein). The elevated uptake of tested compounds in MCF-7 was accompanied by high antiproliferative activity, with compound **1** being the most active (IC50 = 12.6 _ 1.2 _mol/L). Further studies showed that inhibition of MCF-7 growth is associated with the induction of early and late apoptosis and cell cycle arrest at the G0/G1 phase. In summary, the chemical modification of the biguanide backbone into halogenated sulfonamides leads to improved transporter-mediated cellular uptake in MCF-7 and contributes to the greater antiproliferative potency of studied compounds through apoptosis induction and cell cycle arrest.	2020	:10.3390/ijms21072389