

16th International Conference and Exhibition on

Pharmaceutical Formulations

July 26-27, 2018 | Rome, Italy

Indomethacin as a co-drug for enhancing the bioavailability and anti-cancer activity of curcumin

Kajal Sharma and Prem Felix Siril

School of Basic Sciences and Advanced Materials Research Centre, India

Curcumin, a polyphenolic compound extracted from the very common herb turmeric, possess wide range of pharmacological effects including antioxidant, anti-proliferative, anti-inflammatory and anti-angiogenic activities. It is safe to use upto very high dose of 12g/day in humans. But, it exhibits poor bioavailability due to various reasons including, poor solubility, poor stability and rapid metabolism rate.¹ Curcumin exhibits four solid forms, monoclinic (form-1), orthorhombic (form-2 and form-3) and amorphous form. It is well-known that amorphous solid often have faster dissolution rate than their crystalline counterpart. In some cases, interaction with a co-drug may lead to a suitable solid form that possesses desired properties of a particular drug.² In this work, we report studies carried out to investigate the effect of nanoformulation of curcumin with indomethacin as a co-drug using Chitosan as stabilizer on the solubility and anti-cancer activity of curcumin. Curcumin and indomethacin were found to form co-amorphous nanoparticles having mean particle size of 143.38 ± 51 nm at optimized composition using evaporation assisted solvent-antisolvent interaction (EASAI) technique.^{3,4} H-bonding interaction between phenolic -OH group of curcumin and carboxylic -COOH groups of indomethacin was evidenced by NMR study. PXRD and DSC data explain the change in the solid form of curcumin on interaction with indomethacin. Majorly, orthorhombic form of curcumin was present in bare CUR particles, CUR NPs exhibit semi-crystalline nature while only amorphous form was present in CUR-INDO NPs. Release of curcumin was more than two-fold from CUR-INDO NPs in comparison to CUR NPs at physiological conditions. Due to their enhanced bioavailability and multifunctionality, CUR-INDO NPs are expected to have enhanced pharmaceutical activities including anti-cancer activities which are under investigation.

kajalsharma1993@gmail.com