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## Dual Drug Loaded Liposomes

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Curcumin is a functional food, which provides a wide range of health benefits including anti-cancer activity and considered as a suitable alternative for chemotherapeutic agents. The major barriers to the clinical usefulness of curcumin in the treatment of cancer is poor oral bioavailability. However, poor oral bioavailability of curcumin is mainly due to its poor aqueous solubility, intestinal metabolism, hepatic metabolism and rapid systemic clearance. These limitations can be overcome by formulating dual drug loaded liposomal formulation.

Dual drug loaded liposome is expected to increase the aqueous solubility and thereby increase the bioavailability of both curcumin and bio-enhancer. Bio-enhancer is expected to minimize intestinal and hepatic metabolism by a competitive mechanism and thereby increase the bioavailability of curcumin.

Hence several batches of liposomes were prepared for optimization. The solubility of pure curcumin and the prepared dual drug loaded liposomes were compared which confirm enhancement of the water solubility of the prepared combination. For bioavailability study, pure curcumin, a mixture of pure curcumin with bio-enhancer and dual drug-loaded liposomes were administered orally at the same dose level to three different animal groups. Blood samples were collected at fixed intervals. Blood samples for the presence of curcumin and bio-enhancer using a validated HPLC method. Bioavailability was calculated and compared with pure curcumin and pure curcumin with bio-enhancer and liposomal formulation. This formulation appears to be promising to overcome oral bioavailability limitations of curcumin.