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Gallstones - Updates on recent developments in genetic, biochemical and metabolic mechanisms

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At the beginning, the monograph describes the whole aspect of gallstone disease and at the end, sums the future promise of gallstone research, especially the genetic research of gallstones. The book clings to strict scientific principles and is designed to explore the whole aspect of gallstone diseases from the micro world of the genetic defects, basic metabolisms of bile lipids in cholesterol gallstone patients to the macro world of clinical triple defects of gallstone patients. The monograph is divided into two volumes. Volume I updates researches on epidemiology, classification, genetic defects resulting in gallstone disease and basic metabolism of gallbladder lipids. It delineates also recent breakthroughs and developments in genetic factors affecting cholesterol gallstone formation including genes ABCB11, ABCG5/G8, GPBAR1, OSTα/OSTβ, Megalin and Cubilin proteins. It also covers basic metabolisms of bile lipids (cholesterol, bile acids and phospholipids) in relation to cholesterol gallstone stone formation. It also covers some aspects of the epidemiology, classifications, chemical and crystallographic studies of gallstones. Volume II depicts motor dysfunction, etiology and pathogenesis of gallstones. It deals with motor dysfunction in calculous gallbladders as well as reactive oxygen species as a pathogenic mechanism of gallstones formation, etiology and pathogenesis of pigment, calcium carbonate and intra-hepatic gallstones are also described. In the talk, the speaker will highlight in detail the signaling pathways of GPBAR1 receptor in relation to cholesterol gallstone formation, the crystallographic studies of calcium carbonate gallstones and the role of calcium ion and bicarbonate anion play in the formation of calcium carbonate gallstones.

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Activity of silymarin against UV induced tumorigenicity: *In vitro* and *in vivo* study

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Silymarin a flavonoid has gained research attention in cancer chemo-prevention in addition to hepatic diseases. Despite tremendous activities of silymarin, its instability and high insolubility pose challenges in the development of a suitable topical product. The aim of this study was to develop biocompatible lipid-based topical nanocarriers of silymarin by solvent free technique to improve its stability, anti-oxidant capacity and also evaluate its action against tumourigenicity by UV (Ultraviolet) induced study in mice. Silymarin-NLC were characterized by particle size and morphology, entrapment efficiency, differential scanning calorimetry (DSC), powder X-ray diffraction (XRD), and *in-vitro* release study. The results from XRD and DSC of the silymarin showed that the NLC of the drug converted to an amorphous state. In addition, the antioxidant activity of the silymarin-NLC was more effective than pure drug on DPPH scavenging, anti-superoxide formation, superoxide anion scavenging analysis. In case of UV induced tumourigenicity study in mice, tumour number was reduced 52% while tumour volume was reduced from 256±23 mm3 to 120±31 mm3. Stability studies as per ICH guidelines for 03 months revealed its stability over the entire period. In conclusion, silymarin-NLC are a novel delivery system through which anti-oxidant and anti-cancer activities of silymarin are enhanced dramatically as a consequence of enhanced stability.

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