A liver cDNA subtraction library using the liver tumors of the X15-myc transgenic mouse was constructed. High throughput sequencing of randomly selected 500 clones provided a list of differentially expressed genes that may have close biological relevance in the process of HCC.

Rps27a, a ubiquitin precursor protein fused to the 80 amino acid carboxyl extension protein (CEP) has been identified as the most frequently expressed gene and further characterized as an efficient biomarker of HCC.

The flow cytometry analysis revealed that Rps27a overexpressing cells accelerated cells to enter G1 phase to S phase with enhanced cell proliferation.

Immunohistochemical staining revealed abundant expressing of Rps27a in both cytoplasm and nucleus of the tumor tissue of younger mice. The expression was moderately reduced from 3 months to 18 months old Transgenic liver tissues.

*in vitro* cytotoxicity and *in vivo* transgenic animal studies suggested that aqueous extract (A003) and fractions (F008 and F009) of *Butea monosperma* flowers is not only hepatoprotective but also carries anti-proliferative, anti-tumorogenic and anti-angiogenic properties.

The chemopreventive action of fractions, F008 and F009 was less prominent as compared to the aqueous extract A003 suggesting either loss or inactivation of some of the key constituents in these fractions.
Summary

- Immunohistochemical analysis of Rps27a in the transgenic animals treated with aqueous extract A003 revealed a marked reversal of pathological manifestation including no staining for Rps27a in the liver.

Overall, the aqueous extract of *Butea monosperma* flower has the potential for developing new cancer therapeutics and the sensitivity of over expressed Rps27a in HCC might be a general biomarker for tumor proliferation. Although the present findings are promising, further investigations would be necessary to confirm the role of Rps27a in molecular pathogenesis of HCC and establish its role in early detection of cancer.