be helpful for indicating intra-hepatic recurrence, especially in cases with HCCs smaller than 5 cm in diameter, and most of the extra-hepatic relapse occurs in the cases with HCCs larger than 5 cm in diameter irrespective of NSP patterns.

**Keyword:** Hepatocellular carcinoma, Hepatitis B virus, Notch1, Snail, p53 Wild, p53 Mutant

**PO-27**

**Drug interaction between Ginseng Extract (GE) and Sorafenib: modulation of pERK**

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**Background:** Sorafenib is the only approved systemic, therapeutic agent for hepatocellular carcinoma (HCC). The use of Ginseng Extract (GE) in cancer patients is growing worldwide; however, drug interaction between sorafenib and GE has not been illuminated.

**Methods:** Four different human cancer cell lines including HepG2 were used. For in vivo study, immunocompetent mice were implanted subcutaneously with a mouse HCC cell line.

**Results:** Treatment of GE stimulated cell growth in its low dose while it inhibited growth in high dose. pERK (phosphorylation of extracellular signal-regulated kinase) was concomitantly increased and decreased respective of differential doses of GE. Antitumoral effect of sorafenib decreased in non-proliferating phase cells but was sensitized after low dose GE (LDG) treatment. PD98059 (ERK phosphorylation inhibitor) efficiently blocked ERK phosphorylation, resulting in loss of sorafenib sensitization even after LDG treatment. In the HCC mouse model, LDG alone slightly increased tumor size while sorafenib alone significantly decreased tumor size. However, combination of LDG and sorafenib significantly decreased tumor size compared with sorafenib alone. Increase of pERK was observed in some mouse normal organs and mild inflammatory change was observed in some of these organs suggesting pERK activation by LDG may cause unexpected toxicity in normal cells.

**Conclusions:** Although combination of GE and sorafenib showed synergistic effect in antitumoral response to sorafenib, its concomitant use in cancer patients should be carefully advised before further study on drug interaction between GE and sorafenib. Previously, pERK level has been provided as a potential predictive marker for sorafenib. This is the first report showing that sorafenib effect can be sensitized by pharmacological modulation of pERK.

**Keyword:** Sorafenib, Ginseng, pERK, HCC

**PO-28**

**The tumor bed effect: irradiation of normal tissue enhanced the tumor growth VIA up-regulation of IL-17 and IL-6**

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**Background:** Tumor bed effect has been described as radiation destroys anatomical and functional state of the tumor bed stroma which can result in growth delay of tumor implanted into the irradiated bed.

**Methods:** We investigated whether irradiation of normal tissue could influence on the growth of subsequently implanted tumor. The experimental model has been set up using C3H/HeJ mice by irradiating 5 Gy on their thighs followed by implantation of syngeneic tumor cells, murine hepatocarcinoma, HCA-1.

**Results:** Interestingly, tumor growth was accelerated in tumor implanted into the irradiated bed. To elucidate the mechanism by which radiation accelerated the tumor growth in irradiated bed. CD4+ T cells were isolated from spleen and lymphnode in each mouse, which were incubated for 4 day in present of α-CD3/CD28. We collected the culture media and measured IL-17 by ELISA because IL-17 is mainly secreted from Th17 cells, which plays a role in pre-tumor effect. Indeed, IL-17 was up-regulated by irradiation. In addition, IL-6 and TGF-β mRNA levels also were increased in splenocyte of irradiated-mice. These results could be confirmed in vitro test.

**Conclusions:** Taken together, our results indicate that low dose radiation- injured tumor bed can be conducive to tumor growth via up-regulation of Th17 cells and suggest that IL-17 inhibitor may be a possible therapeutic agent against radiation-induced recurrence.

**Keyword:** Tumor bed effect, Liver cancer, Radiation, T cell, Cytokines

**PO-29**

**High expression of microRNA-345 predicts a low risk of tumor recurrence following curative resection of hepatocellular carcinoma**

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**Background:** MicroRNAs (miRNAs) has recently been implicated in carcinogenesis and tumor progression. Hepatocellular carcinoma (HCC) is well known for frequent relapses following curative resection. In this study, we attempted to identify the miRNAs associated with HCC recurrence and their biological functions.

**Methods:** We evaluated miRNA expression profiles in 25 pairs of HCC and adjacent non-tumor liver tissues from HCC patients using miRNA microarray and defined a target gene. To evaluate