Bioassay guided extraction has been employed to obtain bioactive compounds from a variety of plants common in traditional Chinese diet and medicine. Three different cultured cell lines derived from hepatic, intestinal carcinoma and adipose cells are used to assess the activity of extracted materials to induce apoptosis or necrosis, reduce lipid accumulation and increase adipocytokines expression, as well as to estimate bioavailability. Once bioactivity is detected and the phytochemical profile has been established by HPLC-MS analysis, the extracts are typically fractionated based on the polarity of the resultant HPLC profile. Fractions of interests are then concentrated and further tested for activity and potential additive, antagonistic synergistic response when combined with other extracts, phytochemicals or pharmaceuticals. This presentation will focus on the bioactive determination of triterpenoids recovered from medicinal plants such as American ginseng (Panax quinquefolius), Asian ginseng (Panax ginseng), soy (Glycine Max) and bitter melon (Momordica charantia). These plants have a long history of use and contain complex triterpenoid compositions that possess multiple activities such as cytotoxicity and induction of apoptotic cell death, ability to differentiate hepatocarcinoma cells, reduce lipid accumulation and increase adiponectin secretion from the adipocyte. For example, both American ginseng and Asian ginseng contain similar dammarane type triterpenoids commonly known as ginsenosides that differs in proportions. Asian ginseng however has been shown to reduce lipid accumulation and increase adiponectin secretion from the adipocytes at lower concentration than American ginseng. In addition, oleanane triterpenoids from soy have varying cytotoxicity that is dependent on chemical structure. The focus of the research is to ultimately classify bioactive response based on the chemical structure of the compound and to provide evidence-based preclinical data that would allow the development of novel products that may be used to combat metabolic-related disease such as insulin resistance.

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Bioactive Response of Cultured Hepatocarcinoma Cells and Adipocytes to Triterpenoids Derived from Selective Medicinal Plants

Date: 25th March 2011 (Friday)
Time: 11am – 12.30pm
Venue: NTU SPMS CBC Building Level 2, Conference Room
Host: Assoc. Professor Li Tianhu