and emesis. In the present study, we investigated the anti-obesity effects and antioxidant activity of KE-06.

**Methods:** 3T3-L1 preadipocytes were differentiated into adipocytes with or without KE-06. After differentiation, we measured Oil Red O staining, glycerol-3-phosphate dehydrogenase (GPDH) activity and leptin production in 3T3-L1 adipocytes. In addition, we analyzed its effect on scavenging activities of 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (A BTS) and 2,2'-diphenyl-1-picrylhydrazyl (DPPH) radicals in in vitro systems. Its effect on low-density lipoprotein (LD L) oxidation was assessed by measuring production of malondialdehyde (MDA).

**Results:** KE-06 significantly inhibited lipid accumulation and triglyceride production, and mediated GPDH, a major enzyme in the process of adipogenesis. Consistent with this, KE-06 stimulation significantly decreased the amount of leptin in 3T3-L1 adipose cells. Furthermore, KE-06 enhanced the scavenging activities on ABTS and DPPH radicals. The generation of MDA during LDL oxidation was significantly reduced by KE-06 treatment.

**Conclusion:** Overall, our findings suggest that KE-06 has the potential for anti-adipogenic activity and antioxidant properties.

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P1.010

Development of Anti-hepatofibrotic Herbal Drug (CGX)

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**Purpose:** Liver fibrosis is the key pathological change which is arisen by most of chronic hepatic injuries. The progress of hepatic fibrosis determines the clinical outcome of patients, but no therapeutics for the disease exists yet. The objective of the present study is to present the overall status for CGX development regarding its clinical backgrounds, pharmacological studies in animal models, and current process of randomized clinical trial.

**Methods:** CGX has been used for patients suffering various liver diseases, including chronic viral hepatitis and alcoholic liver disorders. The safety study for CGX using rats and beagle dogs, and pharmacological actions in animal models using chemicals (CC4, DMN, or TAA), chronic alcohol consumption, choline-deficient (MCD) diet, and bile duct ligation (BDL) were presented respectively. The objective of the present study is to present the overall status for CGX development regarding its clinical backgrounds, pharmacological studies in animal models, and current process of randomized clinical trial.

**Results:** CGX is a modification of a traditional Korean herbal medicine, which is under clinical trial phase III for hepatofibrosis therapeutic effect. The main mechanisms of CGX related to anti-hepatofibrotic effects involve the inhibition of hepatic stellate cells producing extracellular matrix (ECM), down-regulation of pro-fibrogenic cytokines (TGF-β, PDGF, CTGF), and modulation of oxidative stressors and enhancements of antioxidant components. In addition, microarray experiment revealed the regulative action of CGX on VEGF gene expression.

**Conclusion:** Various animal data strongly expected that multi-sites clinical trial evidences the fibro-therapeutic effects in patients with chronic viral or alcoholic liver diseases.

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P1.011

Anti-tumor activity of Gleditsia sinensis thorns targeting angiogenesis

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**Purpose:** Gleditsia sinensis thorns have been used in Korean medicine to treat diverse diseases including thrombosis and relieve symptoms similar to cancer. The present study aims to (1) determine the anti-angiogenic effects of the ethanol extract of Gleditsia sinensis thorns (EEGS) in vitro and in vivo, (2) evaluate anti-tumor potential in vivo, (3) identify the active constituent of EEGS, and (4) understand its underlining mechanism.

**Methods:** EEGS was prepared by maceration of dried powder of Gleditsia sinensis thorns in 80% EtOH. Anti-angiogenic effects of EEGS were determined in vitro by quantifying HUVEC-mediated cell migration and tube formation, and in vivo by measuring new blood vessel formation into the pro-angiogenic factors-imbedded matrigel. Anti-tumor potential of EEGS was evaluated using a tumor-xenografted mouse model. Isolation and identification of active constituent from EEGS were carried out by activity-guided fractionation and NMR-Mass spectroscopy, respectively. Alteration of gene expression following drug treatment was determined by conventional molecular biological methods.

**Results:** EEGS inhibited proliferation of HUVEC without affecting cell viability. Angiogenic properties of EEGS, such as cell migration and tube formation, were significantly inhibited by EEGS. Formation of new blood vessels induced by pro-angiogenic factors and growth of xenografted tumors were suppressed by EEGS as determined by in vivo animal models. HPLC-NMR-Mass spectroscopic analyses revealed that cytochalasin H is an active anti-angiogenic constituent of EEGS. Anti-angiogenic potential of EEGS and cytochalasin H was related with the reduced expression of pro-angiogenic factors, such as EDN1 and MMP2.

**Conclusion:** Taken together, our findings suggest that EEGS can inhibit angiogenesis as well as tumor growth by down-regulating expression of pro-angiogenic factors. Therefore, EEGS can be considered as a good starting material to develop a novel anti-cancer drug targeting angiogenesis. This study
reinforces the importance of medicinal plants of ethnopharmacological uses in a pharmaceutical business.

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P1.014

Reduction of metastatic and angiogenic potency of malignant cancer by Eupatorium fortunei via suppression of MMP-9 activity and VEGF production

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Purpose: Eupatorium fortunei has long been used to treat nausea and poor appetite, and has been prescribed as a diuretic and detoxifying drug in Chinese medicine. Recent studies have demonstrated that E. fortunei possesses antibacterial, anti-oxidant, and anti-diabetic activities, as well as cytotoxicity to human leukemia cells. However, at non-toxic concentrations, the effects of an aqueous extract of E. fortunei (WEF) on the metastatic and angiogenic potential of malignant tumor cells have not been reported.

Methods: The inhibitory effect of WEF on the metastatic and angiogenic properties of malignant tumor cells in vitro and in vivo was examined. Furthermore, detailed underlying mechanism of the anti-metastatic and angiogenic activity of WEF was elucidated.

Results: We found that WEF suppressed the metastatic properties, including anchorage-independent colony formation, migration, and invasion, by downregulating the proteolytic activity of MMP-9. NF-κB activation and the phosphorylation of p38 and JNK were reduced significantly by WEF. Additionally, WEF inhibited tumor-induced angiogenesis markedly, affecting HUVEC migration, tube formation by HUVECs, and microvessel sprouting from rat aortic rings via a reduction in VEGF in tumors. In a pulmonary metastasis model, daily administration of WEF at 50 mg/kg markedly decreased metastatic colonies of intravenously injected B16F10 cells on the lung surface in C57BL/6J mice. Further, none of the WEF-administered mice exhibited systemic toxicity.

Conclusion: Taken together, our results indicate that WEF is a potential therapeutic herbal product that may be useful for controlling malignant metastatic cancer.

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P1.016

Comparison of the morphological characteristics of the threadlike structure observed in rat and swine

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Purpose: A threadlike structure has been identified in a range of animal species including rats, rabbits, canines, and swine. Although various studies have been carried out to characterize this structure, tentatively named as the ‘primo structure’, its morphological criteria are still obscure. In this study, we tried to classify the threadlike structure of swine based on the morphological findings obtained from the observation of various threadlike structures, and to provide basic data that will be helpful in the analysis of a similar threadlike structure in swine.

Methods: The threadlike structure observed in rats is characterized by the absence of cavities, including epithelial cells; the presence of bright cells among epithelial cells, which were not stained by Eosin during H&E staining; and dense nuclear distribution.

Results: Of the 65 tested samples of this threadlike structure in rats, 26% exhibited all three features. When these characteristic criteria were applied to the swine, only 1% of 100 samples showed all three characteristics: 41% contained cavities; 37% contained bright cells; and 8% exhibited dense nuclear distribution.

Conclusion: Though a number of swine tissues exhibited characteristics similar to those of the threadlike structure of rats, the proportion of tissues meeting the exact criteria was lower than in the case of rats. This might be attributable to several factors including the uniqueness of the swine system, the specific characteristics of the threadlike structure of swine, and the experimental setting of the swine model. Therefore, additional studies of species-specific criteria are required in order to differentiate these threadlike structures, and to reveal the functional characteristics of each structure.

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P1.017

The Emotional Pictures Application to Subthreshold Depression by Evaluating REP Changes

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Purpose: This research uses Event Related Potential (ERP) technology to analyze characteristics of different valence