

International Conference and Exhibition on

# NANOMEDICINE AND DRUG DELIVERY

May 29-31, 2017 Osaka, Japan

## Anti-angiogenic efficacy enhancement in nano phospholipid complex of *Orthosiphon stamineus* ethanolic extract

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*Orthosiphon stamineus* (*O. Stamineus*) is a therapeutic herb with significant pharmacological properties. High dose of *O. stamineus* extract had demonstrated some potent anti-angiogenic and antitumor activities. It had weak competency to cross the biological membranes because of consisting large size of rings in its active compounds and high water solubility. This study aims to develop and characterize new *O. stamineus*-phospholipid complex to reveal more anti-angiogenic efficacy by incorporating with phosphatidylcholine to form new cell like structure which is amphipathic in nature. *O. stamineus*-phospholipid complex was prepared by the modified film method, and characterized for its physico-chemical properties. *Ex-vivo* and *in-vitro* anti-angiogenic studies demonstrated efficacy improvement after formulation. Fourier Transform Infrared Spectroscopy (FTIR), Transmission Electron Microscopy (TEM), particle size and HPLC analysis confirm the formation of phospholipid complex. Phospholipid complex of *O. stamineus* solubility increased in active compounds with  $89.21 \pm 45.44\%$  entrapment. *Ex-vivo* study showed 50% improvement in anti-angiogenic activity at high dose. Inter (n=3) and intra (n=5) lab experiment were used for confirmation. Thus, this study demonstrated new nano *O. stamineus* -phospholipid complex as a promising method to enhance anti-angiogenic activity. Moreover, this method can be used as a sustained delivery system for hydrophilic compounds with poor lipid-solubility and low oral bioavailability which improves pharmacological properties.

### Biography

Mansoureh Nazari Vishkai is a PhD research student at School of Pharmaceutical Sciences, Universiti Sains Malaysia. She has expertise in the development of nano formulation of *Orthosiphon stamineus* ethanolic extract, a poorly water soluble extract with potent anticancer activity. She has used phosphatidylcholine as carrier which is an essential part of the cell membranes to develop this unique formulation. This agent not only acts as a carrier of water insoluble extract but also nourishes the lipid membranes of the cells. Her formulation has the potential to be manufactured in large scale and can be used as a carrier for other therapeutic drugs.

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