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Abstract

**Proangiogenic effect of
Angelica Sinensis, *Radix Astragali*, *Radix Notoginseng*
in Zebrafish**

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Zebrafish (*Danio rerio*) is an excellent ideal animal model. It has already been used extensively as a genetics and developmental biology animal model. Many advantages of zebrafish make it become the optimal vertebrate animal model for biological research. Angiogenesis, as a frequent and a major biological process, plays a key role during some pathologic states of ischemia, wounds healing, tumor growth, and so on. While, based on the practice and utilization of traditional Chinese medicine, and the neoteric research and study, Chinese medicinal herbs of promoting blood flow and removing blood stasis, tonifying *Qi* and nourishing the blood have some activities of promoting endothelial cell proliferation, differentiation, migration, and then formation of new tube. So these herbs can be applied clinically for treating coronary artery disease, myocardial ischemia, myocardial infarction and other cardiovascular and cerebrovascular diseases.

On the basis of the characteristics of our institute, to improve the research system of our institute further, my study in this thesis mainly applied the zebrafish model to screen some Chinese medicinal herbs having effect on promoting angiogenesis, aiming at investigating the pharmacological action of Chinese medicinal herbs.

This thesis consists of four chapters. Chapter I is the literature review on zebrafish and angiogenesis, including fundamental biological features, and its applications in various fields of research, generation and significance of angiogenesis, and the components and pharmacological actions of selected Chinese medicinal herbs. Chapter II focuses on introducing concrete materials and methods in my study, involving the qualitative methods and quantitative methods, and the application of

some new technics, like flow cytometry and quantitative RT-PCR. Chapter III states the results of my study. The preliminary findings indicated that selected Chinese medicinal herbs have evident effect of promoting angiogenesis in zebrafish. And there exist some differences between the site of action and efficacy of them. Chapter IV is for discussion. Because there is little utilization of zebrafish for Chinese medicinal herbs study, and zebrafish is an entire new model for me, many factors of the relative research should be improved.

In sum, zebrafish was applied into the study of Chinese medicinal herbs for the first time in this thesis. A new approach, using zebrafish to investigate the proangiogenic effect of Chinese medicinal herbs, was developed, which will set up a better platform in our institute for drug screening and drug discovery. It also can further verify the pharmacological actions of proangiogenic effect of selected Chinese medicinal herbs. The results of this project are expected to supply more theoretic basis for clinical mediation in the future.

KEY WORDS: Zebrafish, Transgenic, Fli-1, Angiogenesis, Promote, TCM, *Radix Angelicae Sinensis*, *Radix Astragali*, *Radix Notoginseng*