Effects of Natural Herbal Extracts and Their Components on Cardiac Disorders of Metabolic Syndrome Animal Models

Yi-Lin Lin[1], Ming-Jen Fan[2] , Chong-Kuei Lii[3],Tzu-En Lin[1],Wei-Wen Kuo[4],Chih-Yang Huang [1,2]

sigrid0316@hotmail.com

[1] Graduate Institute of Basic Medical Science, China Medical University, Taichung
[2] Department of Biotechnology, Asia University, Taichung
[3] Department of Nutrition, China Medical University, Taichung
[4]Departmentof Biological Science and Technology, China Medical University, Taichung

Backgrounds:

To investigate whether antrocyanin and *Andrographispaniculata*extracts could inhibit cardiac cell apoptosisin diabetes and obesity respectively.

Materials and Methods:

Diabetes was induced in five-week-old male wistar rats using streptozotocin, then progressed for 1 weeks, and the treatment of extract product from purple rice, anthocyanins were gavage for 4 weeks constantly.Obesity was induced of four-week-old male C57/BL6 mice,high-fat diet by 45 kcal% were fed for ten months, and then *Andrographispaniculata*extractswere gavage for 1weeks.Moreover, cardiac diastolic and systolic function was assessed using ecocardiogaphy, and heart weight, cardiomyocytemorphology, protein level were also assessed individually.

Results:

As a result, anthocyanins and*Andrographispaniculata*extractsboth significantly inhibited Fas-dependent and mitochondria-dependent apoptotic protein activation,prevented cardiomyocyte disarray and even restored cardiac function of diabetes and obesityanimal hearts. Moreover, the progression of heart failure is through pathological hypertrophy to cause cardiomyocytes apoptosis, then lead to cardiac fibrosis,finally cause cardiac contractile dysfunction in diabetes and obesity animal hearts. However, anthocyanins and*Andrographispaniculata*extracts both reversed the heart damage effects, allthe resultswere identified by western blot assay and histopathological analysis in thehearts of diabetesand obesityanimal.

Conclusion:

Metabolic Syndrome maycause cardiac hyperthophyand cardiomyocytesapoptosis finally lead to fibrosis andcardiacdysfunction,but gavagenatural herbal extractsanthocyanins and*Andrographispaniculata*prevented all those unhealthy effect of diabetes and obesity hearts.

Keywords: Diabetes mellitus, Antrocyanin, cardiomyopathy, obesity,*Andrographispaniculata*, *Andrographolide*