

Diosmin, Molecular formula: C₂₈H₃₂O₁₅ ; Molecular weight: 608, which can also be found in a variety of natural plants, such as Galium verum, Mint, Lobelia, Milia, Toddalia asiatica, Bergamo, we reviewed the latest pharmacological researches and clinical application prospects in recent years.

1 Antidiabetic effect Srinivasan S[1] found that the effect of 2- on the oxidative stress induced by streptozotocin (STZ) has good therapeutic effect on diabetic rats. 2- induced diabetic rat model was established by STZ. The plasma glucose level of model group significantly increased and the plasma insulin level was significantly lower ; Jain D [2] found that diosmin can improve the nerve lesion in early diabetic rats, type 2- diabetic rats by dafion 5~100 mg/kg after four weeks treatment. It can reduce the body weight, elevate blood glucose and lipid levels were restored;

2 Hypotensive effect Silambarasan T[3] established hypertension model rats by subcutaneous injection of deoxycorticosterone acetate and oral Sodium Chloride Solution, resulting in a rat model of cardiac systolic and diastolic blood pressure, serum sodium and chlorine, plasma and tissues (liver, kidney, heart and aorta) in lipid peroxidation increased significantly.

3 Hypotensive effect The protective effect of geraniol on myocardial injury is closely related to scavenging free radicals and reducing lipid peroxidation.[4]

4 Ischemia reperfusion injury Dung TD[5] research showed that diosmin can resist against cerebral ischemia reperfusion injury in mice induced by apoptosis, activation of JAK2/STAT3 signaling pathway protects the brain ischemia reperfusion injury, and diosmin in high dose group can significantly relieve nerve injury, brain edema, reduce the infarction area, pJAK2, pSTAT3, Bcl-2 expression and downregulation of Bax.

5 Anti apoptosis effect Many studies showed that increased apoptosis and neurodegenerative diseases, inflammatory factors have a certain relationship, the majority of LPS induced cell apoptosis play a role through TNF- products.

6 Anti Lung injury

Imam F's studies show that Diosmin can inhibit proinflammatory cytokines and activation of NF- protective effects on lung injury induced by lipopolysaccharide receptor, T cell. The protective mechanism mainly involves reducing the number of neutrophils, monocytes, lymphocytes, white blood cells (TLC) and platelet count;

7 Other effects Yoo HH[7] found that diosmin had an inhibitory effect on P-gp in Caco-2 cells, which could increase the absorption of P-gp substrates. Attention should be paid to the combination of drugs in clinical treatment in order to avoid adverse reactions.

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APPLICATIONS OF OMICS TECHNOLOGY ON TCM SYMPTOMS EXPLORATION

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Abstract: Traditional Chinese medicines (TCMs) have a long history for the treatment or preventing disease. The symptoms classification may guide patient classification of predose phenotype and prescribe traditional Chinese medicines formula according to the phenotype. The accurate classification of symptoms is a prerequisite for the treatment of traditional Chinese medicine. Due to the diversity pathological basis of TCM syndrome and the uniqueness of the diagnostic methods, it is difficult to use modern medicine to explain the scientificity of TCM syndrome and to diagnose it more accurately. Omics technology (such as Proteomics, Metabolomics, Transcriptomics, Genomics, etc.) has brought the dawn to clarify the mechanism and accurate diagnosis of TCM syndrome. This paper reviews the widely used of past four kinds of omics technology in the research of TCM syndrome and highlights the key role of modern tools for precise diagnosis of TCM syndrome.

Key words: Omics technology; Genomics; Transcriptomics; Proteomics; Metabolomics; TCMs; Symptoms,

Genomics With the development of genetic science, disease has been linked to the abnormal expression of genes. Plenty of researches have linked TCM syndromes to mutations and abnormal expression of some genes. In the research of coronary heart disease, Xue et al. was found blood-stasis “ZHENG” is relate to the polymorphism of platelet activation genes and angiotensin converting enzyme genes [1,2]. Fang et al. consider that the relationships between the polymorphism of apolipoprotein E ApoE) genes and phlegm-stasis “ZHENG” is existed. Numerous studies have demonstrated the association between TCM “ZHENG” and abnormal expression of gene.

Transcriptomics and proteomics Transcriptomics and proteomics are the extension of genomics. Using transcriptomics, Liu et al. have discovered that the qi-yin deficiency patient comparison with healthy persons identified 113 mRNAs-41 enhanced and 72 decreased. Functional genetic analysis of the mRNAs indicated that two TCM syndromes were correlated with cell apoptosis, immune inflammatory responses, and lymphocyte activation [3]. Transcriptomics show the transcription abnormalities of genes. Proteomics is used to analysis the protein expression profiling of syndromes.

Metabolomic The essence of “ZHENG” is the metabolic or network alteration and this altered phenotype is objectively reflected by changes in the expression profile of endogenous metabolic components in the blood or urine [4]. Metabolomics can elucidate the diagnosis of TCM “ZHENG” by exploring terminal product. Wang and his coworkers used UPLC-Q/TOF-HDMS combined with pattern recognition methods to investigate a comprehensive metabolome of YangHuang syndrome (YAH) and YinHuang syndrome (YIH) [5]. Results indicate that Vitamin B6 metabolism, Tryptophan metabolism, Arginine, and Proline metabolism were the top functions listed by MetaboAnalyst3.0 for YAH patient. 40 metabolites were identified as potential candidates for biomarkers[6].

Conclusion In this review, we delineate and discuss the application of omic technologies in TCM syndrome Differentiation. Omic technologies illustrate the essence of the syndrome from different perspectives. Many pathogenic genes and metabolic markers of symptoms have been found. To clarify the essence of “ZHENG” and use a more effective way to classify TCM syndrome is conducive to the precise treatment of Chinese medicine. In a word, we hope this approach will not only narrow the gap between mainstream medicine and TCM but also develop the unique advantages of traditional Chinese medicine treatment.

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APPLICATIONS OF CHINMEDOMICS IN TRADITIONAL CHINESE MEDICINE FOR RAPID DISCOVERY OF BIOACTIVE COMPONENTS

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Abstract Chinmedomics, a unique, holistic, scientific method of traditional Chinese medicine (TCM) research, by integrated serum pharmacochimistry of TCM with metabolomics technology, made a great contribution to elucidate the therapeutic and synergistic properties and efficacy material base on TCMs. The active constituents were screened using the plotting of correlation between biomarkers and constituents absorbed in blood serum after oral administration of a formula (PCMS), and is ongoing verification by further biological experiments. PCMS, used to clarify the active ingredients and synergistic properties, was successfully applied for rapid discovery of potentially bioactive components from TCM. Through a series of formulas studies on the Chinmedomics, it proved that the established method could help to explore the effective substance for further research of TCM and is the best method to fit the holistic concept of TCM as a new research approach. This critical review covers the research achievements of “Research Center of Chinmedomics State Administration of TCM” in innovative drug from serious of formulas include Yinchenhao Tang, Kaixin San, Shengmai San, Liuwei Dihuang Wan, Shaoyao-Gancao decoction, ShenQiWan, Wen Xin Formula, Zi Shen Wan, AS1350, Shuanghuanglian formula, et al.

Key words: Chinmedomics, pharmacochimistry, PCMS, TCM, formula, bioactive components , UPLC-ESI-Q-TOF-MS