

FROM AQUAPORINS STUDY ON DIURETIC EFFECT OF RADIX SCROPHULARIAE IN WATER-LOADED RATS

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Abstract: Backgrounds: The main organs of the body to regulate the balance of water metabolism are the large intestine, lung, heart, small intestine, liver, kidney, salivary gland, pancreas and trachea, which play an important role in the body's water metabolism process. Water metabolism is closely related to aquaporins(AQPs) in various organs. AQPs play a crucial role in the water transmembrane transport in different kinds of cells. AQPs are not only closely related to the occurrence of related diseases, but also provide a new target for the development of related drugs. However, diuresis effect of Radix Scrophulariae was rarely recorded. Radix Scrophulariae was recorded in 《Bie Lu》 for “xia shui”. Radix Scrophulariae was recorded in the “Compendium of Materia Medica” as a diuretic. The application of Radix Scrophulariae was described in compound shishui wan, si zhi zhong man prescription, zhu ling powder, xijiao yin, etc. Studies on diuretic effect of Radix Scrophulariae in water-loaded rats from aquaporins have not been reported at home and abroad. It provides a new way for Radix Scrophulariae to treat disorders associated with abnormal water metabolism .

Objective: To observe the effects of Radix Scrophulariae on urination and the expression of AQPs in normal rats and water-loaded rats, and to discuss its mechanism of diuresis. **Methods:** 40 male qualified SD rats were randomly divided into five groups, including control group, water-loaded model groups, Radix Scrophulariae high, middle and low dose groups. Rats in each groups were given corresponding drug by i.g once a day for 3 consecutive days. On 4th day, rats were intraperitoneally injected and intragastrically given 5ml normal saline after given drugs, urinary amount of each rats in continuous six hours was measured. Then the expression of AQPs protein were detected by ELISA method. **Results:** The diuretic effect of Radix Scrophulariae on normal rats and water-loaded rats were extremely significant ($P<0.01$) ; Compared with normal groups, the level of AQPs in model groups were significantly increased ($P<0.01$) ; Compared with model groups, the level of AQPs in Radix Scrophulariae high dose groups were significantly reduced ($P<0.01$), and the strongest target was pancreas. **Conclusion:** Radix Scrophulariae might have diuresis effect by reducing the expression of AQP3 protein in the pancreas, regulating fluid passage and reabsorbing water.

Key words: Radix Scrophulariae; aquaporins; diuretic effect

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THE COLD AND WARM PROPERTY OF FRACTION OF SCUTELLARIA BAICALENSIS

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Abstract Objective: To explore the cold and warm property of fraction of Scutellaria baicalensis by detecting related enzyme expression in substance metabolism, energy metabolism, endocrine system and autonomic nervous system in heat syndrome model rats. **Methods:** The 60 male SD rats were randomly divided into blank control group, model group, total composition group, aglycone group, glycosides group, polysaccharide group. All groups ig for 15 days. Taking the

liver, heart, muscle and detecting the related enzyme, glucokinase (GCK), phosphofructokinase (PFK), pyruvate kinase (PK), Acetyl coenzyme A (AC-COA), pyruvate dehydrogenase (PDH), citrate synthase (CS), isocitrate dehydrogenase (ICD), glycogen synthase kinase -3 (GSK-3), glycogen phosphorylase (PYGL) and adipose triglyceride lipase (ATGL) and energy metabolism related enzyme adenosine kinase (ADK), ATP synthetase (ATPs), cytochrome C reductase (CCR) and cytochrome C oxidase (COX), Na-K-ATP enzyme (muscle), Na-K-ATP enzyme (liver) expression. Detection of three triiodothyronine related endocrine system (T3), four triiodothyronine (T4) and serotonin 5- autonomic nervous system related (5-HT) and acetylcholine (AChE), norepinephrine (NE) expression. Results: The model group, GCK、 PFK、 PK、 P-DH、 CS、 ICD、 GSK-3、 ATPs、 CCR、 COX、 ADK、 NA-K-ATP (liver) 、 NA-K-ATP(muscle)、 T3、 T4、 AChE、 NE were significantly increased (P<0.05) ; AC-COA、 PYGL、 ATGL、 5-HT were significantly decreased (P<0.05) .The total composition group GCK、 PFK、 PK、 PDH、 CS、 GSK-3、 COX、 ADK、 T3、 T4、 AChE、 NE were significantly decreased (P<0.05) ;AC-COA、 5-HT were significantly increased (P<0.05) . The aglycone group, GCK、 PFK、 P-K、 PDH、 CS、 GSK-3、 ADK、 NA-K-ATP(muscle)、 T3、 AChE、 NE were significantly decreased (P<0.05) ; 5-HT were significantly increased (P<0.05) . The glycosides group, GCK、 PFK、 PDH、 CS、 ICD、 GSK-3、 ADK、 ATPs、 C-CR、 COX、 NA-K-ATP(liver)、 NA-K-ATP(muscle)、 T4、 AChE were significantly decreased (P<0.05) ; 5-HT were significantly increased(P<0.05).The Polysaccharide group ,some indicators were increased,some were decreased,there is no significant difference. Conclusion: total composition of *Scutellaria baicalensis* can inhibit substance metabolism, energy metabolism, endocrine system and autonomic nervous system,and confirm the cold property once again, which is consistent with the new hypothesis proposed by the chief scientist of the subject.In conclusion , aglycones and glycosides have the similar trend with the cold medicine , consistent with previous experimental results about the fraction of *Scutellaria baicalensis* in normal rats.We can infer that aglycones and glycosides the main material basis of *Scutellaria baicalensis* cold property.Polysaccharide has flat property and we need to do deep research.

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ADVANCES IN STUDIES ON PHARMACOLOGICAL EFFECTS OF *CELOSIA CRISTATA*

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Abstract: Cockscomb flower is an annual herb of *Amaranthaceae* family. All the plants can be used as medicine, which is non-toxic and is a traditional Chinese medicine. The text summarizes the relevant reports on cockscomb in recent 20 years, and discusses its pharmacological effects in detail, and provides the basis for better research and development of cockscomb in the future.

Key words: *Celosia Cristata* L.; pharmacological effect

Cockscomb (*Celosia Cristata* L.) *Amaranthaceae* (*Amaranthaceae*) is an annual herbaceous herb, also known as chicken bun, cockscomb head, old and less. Originated in Africa and Asia, tropical regions, and now has a large area in China. Its flowers, stems and leaves, seeds can be used as medicine. Its sweet, astringent, cool, to the liver, large intestine, with a convergence of bleeding, with only, astringent and other effects. According to the relevant literature, the pharmacological effects of cockscomb plants are summarized below.

1 pharmacological effect

1.1 hemostasis Cockscomb extract has a significant hemostatic activity, studies have reported Cockscomb extract by affecting the coagulation system and fibrinolytic system to play a hemostatic effect, and the hemostatic parts of the larger parts of the cockscomb. Bao Beihua et al [1] research results show that cockscomb peanut products and n-butanol parts, ethyl acetate parts with cooling blood, hemostatic effect, carbon has hemostatic effect, and fried carbon after hemostasis. Qu Yanling et al [2] study shows that the hemostatic mechanism of n-butanol parts of coconut flowers mainly by shortening prothrombin time and partial thromboplastin time, reduce tissue plasminogen activator activity, improve plasmin Activation of the original activator inhibitor, thereby promoting the endogenous and exogenous coagulation system, inhibition of fibrinolysis system to achieve the purpose of hemostasis.

1.2 on liver injury protection