Objectives To study the effect of honglanhua-medicated wine on mice skin.
Methods Groups of mice were administered different amounts of honglanhua-medicated wine. The same shaved area of skin from each mouse was evaluated for percentage of moisture, SOD activity and hydroxyproline content.
Results Compared with the control group, in the wine group, skin SOD activity and skin hydroxyproline content tended to increase, while skin moisture content was significantly increased ($p < 0.01$). A high dose of honglanhua-medicated wine significantly improved skin SOD activity ($p < 0.05$), while high and middle doses significantly increased skin hydroxyproline content ($p < 0.01$). High, middle and low doses of honglanhua-medicated wine significantly improved skin moisture content ($p < 0.01$).
Conclusions The results show that honglanhua-medicated wine increased skin moisture content, SOD activity and hydroxyproline content, indicating that honglanhua-medicated wine has a cosmetic effect by locking in skin moisture, rejuvenating skin, increasing skin elasticity, etc, in line with its use in traditional Chinese medicine to enhance beauty. The moistening, antioxidant and emollient properties of honglanhua-medicated wine should be further explored.
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41 ANTIDIABETIC ACTIVITY OF TEA POLYSACCHARIDES IN MICE WITH ALLOXAN-INDUCED DIABETES

Yang Liu, Shuai Li, Yingkun Cheng, Chenliang Li, Di Wang, Guodong Yan*. *School of Life Sciences, Jilin University, Changchun, China*

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Objectives Tea has been viewed as a health drink since ancient times in China. Tea polysaccharides (TPS) extracted from tea possess antidiabetic and hypolipidemic activity. After cancer and cardiovascular diseases, diabetes is the third most common cause of death. As existing treatment is inadequate, research for better drugs should be carried out. The present study aimed to investigate the potential antidiabetic and hypolipidemic activity of tea polysaccharides in mice with alloxan-induced diabetes.
Methods Diabetic mice were divided into five groups which were orally treated with 125 mg/kg metformin and TPS at doses of 200, 400 and 800 mg/kg for 21 days. After 3 weeks of treatment, mice were sacrificed and blood was collected. Levels of blood glucose and lipids were measured using an enzyme-linked immunosorbent assay.
Results After 3-week treatment, similarly to metformin, TPS significantly decreased levels of blood glucose and increased levels of serum insulin. Treatment with metformin and TPS normalized levels of total triglycerides (TG) and total cholesterol (TC), and restored the balance between low-density lipoprotein cholesterol (LDL-C) and high density lipoprotein cholesterol (HDL-C).
Conclusions The results of the present study indicate that TPS may be a potential pharmaceutical agent for the treatment of diabetes as it normalized blood glucose and lipid levels in mice with alloxan-induced diabetes.

42 THE EFFECT OF SHENG JIANGSAN ON INFLAMMATORY FACTORS IN THE ALLERGIC RHINITIS RAT MODEL

[1]Ting Wang, [2]Fengjie Wang*, [3]Baigen Wang. *[1]Department of Pharmacology, Henan University of Chinese Medicine, Zhengzhou, China; [2]The Third Hospital Affiliated to Henan University of Chinese Medicine, Zhengzhou, China; [3]Zhongzhou Henan Coal Mine Machinery Factory Hospital, Zhengzhou, China*

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Objectives To observe the effect of the traditional Chinese compound Sheng Jiangsan on the allergic rhinitis rat model.
Methods Male Wistar rats weighing 180–200 g were maintained under laboratory conditions for 3 days. Rat nasal smears were collected and proved negative for eosinophils. Once a day for 7 days, a pipette was used to administer 10 μL of olive oil solution containing 10% diisocyanate into the anterior nostrils (5 μL per nostril, two drops each). A rhinitis symptoms total score of >5 points and nasal secretions containing a large number of eosinophils indicated successful establishment of allergic rhinitis in rats. Every other day, each rat should be given two drops of diisocyanate olive oil solution to maintain sensitization until the end of the experiment.
Results Sheng Jiangsan administered for 14 consecutive days to the nasal cavity of rats with allergic rhinitis can significantly relieve the symptoms of allergic rhinitis (sneezing, nasal itching, runny nose, etc), reduce the rhinitis symptom total score and significantly decrease the eosinophil count in nasal secretions. Ling Shu nasal spray delivered to rats with allergic rhinitis significantly decreased serum IL-4 and IgE levels and significantly increased serum IFN-γ levels.
Conclusions The traditional Chinese compound Sheng Jiangsan can reduce rhinitis symptoms in the allergic rhinitis rat model, by reducing nasal secretions, inflammation and pathological changes in nasal mucosa.

43 STUDIES ON THE IMMUNOMODULATORY ACTIVITY OF *LONICERAE JAPONICAE* FLOS EXTRACTS IN THE HYDROCORTISONE-INDUCED IMMUNOSUPPRESSED MOUSE MODEL

Liang Wang, Xiaodan Lv, Yumeng Liu, Xi Zhao, Di Wang, Jianhui Zhang*. *Department of Chemistry and Pharmacy, Zhuhai College of Jilin University, Zhuhai, China*

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Objectives *Lonicerae japonicae flos* is widely applied to improve the human immune system in Chinese traditional medicine. However, there are few systematic pharmacodynamic and pharmacological studies of *L. japonicae flos* extracts (LF). Our present study aimed to evaluate the immunomodulatory activity of LF and its underlying mechanisms in an immunosuppressed mouse model.
Methods LF (50, 100 and 200 mg/L of chlorogenic acid) was administered for 31 days. From the 10th day, hydrocortisone (HC, 4 mg/kg) was administered as an immunosuppressant. The spleen index, body weight, lymphocyte proliferation assay, cytotoxic activity assay of natural killer cells, ELISA assay and Western blotting assay were used to assess the immunomodulatory activity of LF.
Results LF strongly ameliorated the reduction in the spleen index and body weight caused by HC. After 200 mg/L LF treatment, NK cell activity increased by 28.3% and T lymphocyte proliferation was upregulated by 17.8% compared with the HC group. Serum levels of IL-1, IL-2, IL-6, TNF-α and nitric oxide (NO)

were significantly enhanced by LF. Increased expression of nuclear factor kappa-light-chain-enhancer of activated B cells (NFκB) and inducible nitric oxide synthase (iNOS) was noted in spleen lysates after LF treatment.
Conclusions *L. japonicae flos* extracts exert immumodulatory activity by improving cellular as well as innate immunity in immunosuppressed mice and promoting the secretion of immune-related cytokines via iNOS-related signaling pathways.

Biochemical Pharmacy

44 CORE-SHELL NANOSPHERES FOR PH-RESPONSIVE RELEASE OF ANTICANCER DRUGS AND NEAR-INFRARED IMAGING

[1]Yuanbao Jin, [1]Ruwen Yuan, [2]Yuanyuan Jin, [1]Liying Wang, [1]Jia Fu, [1]Mingzhi Zhao, [1]Fanxin Meng*. *[1]Department of Chemistry and Pharmacy, Zhuhai College of Jilin University, Zhuhai, China; [2]College of Pharmacy, Chuangchun University of Chinese Medicine, Changchun, China*

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Objectives Nanoscaled drug carriers with pH-responsiveness have attracted extensive interest in view of the acidic environment in cancerous cells. Rapid response to pH changes plays a key role in efficient intracellular drug release. In addition, real-time tracking of drug carriers is important for understanding distribution and targeted accumulation of the drug carriers. This work aims at developing silver selenide quantum dots (Ag_2Se QDs)@carboxymethyl chitosan (CMCS) core-shell nanospheres with encapsulated paclitaxel (PTX) for cancer therapy and bioimaging.
Methods Oleic acid-capping Ag_2 Se QDs were synthesized by a one-pot strategy, washed with ethanol, and obtained by centrifugation. The as-synthesized Ag_2Se QDs were reacted with N-hydroxysuccinimide and conjugated with CMCS at the amino sites. In an aqueous solution of PTX, the hydrophobic oleoyl groups tended to aggregate locally and entrap PTX by hydrophobic interaction, spontaneously producing Ag_2Se QDs (PTX) @CMCS nanospheres.
Results By conjugating the oleic acid-capping Ag_2 Se QDs with pH-sensitive CMCS at a degree of substitution (DS) of 13%, biocompatible core-shell nanospheres loaded with PTX were successfully prepared, which had an average size of 36.3 ± 0.2 nm. The drug loading content (DLC) and drug loading efficiency (DLE) for the PTX was 5.01 ± 0.8% and 52.4 ± 3.2%, respectively. The PTX release half-life was 4.1 hours under conditions resembling the intracellular environment of cancerous cells (37°C, pH 5.0).
Conclusions Core-shell structured Ag_2Se QDs (PTX)@CMCS nanospheres capable of releasing PTX in an acidic environment and emitting NIR fluorescence under NIR laser excitation were synthesized and characterized. The hydrophobic oleoyl groups entrapped PTX via hydrophobic interaction and the oleoyl-CMCS chains were extended at lowered pH to release the otherwise encaged drug. In addition, the encapsulated Ag_2Se QDs can emit bright NIR fluorescence for bioimaging by which nanosphere distribution in a patient can be monitored. This study provides a new approach for developing nanocomposite drug carriers for cancer therapy.

45 PREVENTIVE EFFECT OF *SPARASSIS CRISPA* ON TYPE I DIABETES

Lingjun Meng, Jiahui Lu, Wei Meng, Dan Jiang, Di Wang, Yutong Quan*. *School of Life Sciences, Jilin University, Changchun, China*

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Objectives The purpose of this study was to investigate the preventive effect of *Sparassis crispa* on type I diabetes.
Methods The preventive effect of *S. crispa* extract (0.6 g/kg/day) was investigated using a rat model of type I diabetes established by streptozotocin after 3-week oral administration. The diabetes-related factor index was examined using the ELISA test.
Results Compared to the model group, the *S. crispa* extract administration group showed lower diabetic weight lost ($p < 0.01$), lower fasting glucose levels and lower postprandial 2-hour blood glucose levels ($p < 0.001$). *S. crispa* extract administration can significantly alleviate STZ-induced decrease in glucose tolerance and reduce STZ-induced elevation in endotoxin and iNOS levels. It also effectively suppresses glycosylated hemoglobin accumulation and reduces total bile acid level.
Conclusions *S. crispa* extract has a good preventive effect on type I diabetes. This study provides a theoretical basis for its use in healthcare products and drugs for type I diabetes.

46 SANDWICH-TYPE ETHYLCELLULOSE FILMS FOR CONTROLLED RELEASE OF ANTI-RESTENOSIS DRUGS

[1]Liying Wang, [1]Yuanbao Jin, [2]Yuanyuan Jin, [1]Mingzhi Zhao, [1]Yumeng Liu, [1]Fanxin Meng*. *[1]Department of Chemistry and Pharmacy, Zhuhai College of Jilin University, Zhuhai, China; [2]College of Pharmacy, Chuangchun University of Chinese Medicine, Changchun, China*

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Objectives Restenosis is a response of the vessel wall to balloon-induced injury and is characterized primarily by elastic recoil of the vessel wall and a series of pathological processes including thrombus, inflammation and vascular smooth muscle cell (VSMC) proliferation. To treat restenosis, appropriate drug delivery vehicles are needed which can release therapeutic agents targeting different symptoms into blood vessels in a controlled manner. The main objective of the present study was to prepare sandwich-type ethyl cellulose films with high performance for efficient drug loading and controlled drug release for restenosis treatment.
Methods Sandwich-type ethyl cellulose films loaded with probucol for treating coronary artery disease, or aspirin as an antithrombotic drug, were prepared by casting three individual layers in sequence using an ethyl cellulose/toluene solution. On a glass plate, the first ethyl cellulose layer (bottom layer) was cast without drugs, on to which the middle layer containing probucol or aspirin was then cast. After solvent evaporation at room temperature, a third top layer was cast on to the middle layer. The obtained drug-loading films were further dried at room temperature under vacuum.
Results The sandwich-type ethyl cellulose films exhibited a drug loading content (DLC) of 12.1 ± 0.9% and a drug loading efficiency (DLE) of 73.5 ± 3.6% for aspirin, and a DLC of 11.0 ± 0.8% and a DLE of 69.3 ± 3.4% for probucol. Under physiological conditions (37°C, pH 7.4), the release half-life of aspirin from the films was 2.7 ± 0.2 hours, while that of probucol was