Objectives Pharmacists are in demand both because of their knowledge of medical therapy and also due to their skills in basic physical assessment as medical personnel. The traditional 'two stage' teaching approach for pharmaceutical education in China (theoretical teaching in the early stage and practice teaching in the later stage) has some drawbacks, for instance practice time is too concentrated and there is a large gap between students' theory and practice. The aim of this study was to improve the quality of the teaching of pharmacy students.
Methods We use the full-time visitation model in our teaching hospital for pharmaceutical education. A total of 98 pharmacy undergraduates taught using the traditional model and 176 pharmacy students taught using the full-time visitation model were studied from 2013 to 2015 so that an evaluation appraisal system could be designed. The outline of the method to confirm basic vital signs with simulators was first explained and then demonstrated. Simulations reproduced the effects of drugs on the patient's condition, and the students' knowledge and skill in advanced objective structured clinical examination through practical examinations was checked.
Results Pharmaceutical education was conducted using patient simulators for bedside training, seminars in our hospital pharmacies, and physical assessment practice. Using the full-time visitation model, the excellent results of pharmacy students in basic medical knowledge (80.6%), doctor-patient communication (78.02%), clinical ability and skills (70.41%) and other aspects of comprehensive evaluation (81.6%) were better than those of students taught using the traditional model ($p < 0.05$). However, basic theory was taught better using the traditional model (85.2%) than with the objective structured clinical examination (OSCE) model (79.6%). The results of case study exercises in which students perform physical assessments and collect basic information on patient background were excellent.
Conclusions The full-time visitation model can improve the clinical practical skills of pharmacy students and pharmaceutical education using simulation provides pharmacy students and pharmacists with experience in the different types of medical treatment provided by various healthcare professionals, leading to exploration of new roles for pharmacists in team medical care.
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Poster Session

Pharmaceutics and Drug Delivery Research

34 A PH-SENSITIVE POLYMER ENHANCES THE SPECIFICITY AND THERAPEUTIC EFFICIENCY OF LIPOSOMAL DOX IN VITRO

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Background Lipid nanoparticles (LNPs) were eagerly anticipated as promising delivery systems for cancer drugs due to their biocompatibility and tendency to accumulate in tumor tissues. 3-Methylglutarylated poly (glycidol) (MGluPG) was insert into LNPs to form pH-sensitive polymer-modified liposomes which can delivery doxorubicin (DOX) into tumor cells by membrane fusion under relatively acidic conditions. In this study, we report that MGluPG-modified liposomal DOX can efficiently promote antitumor activity and target binding compared to non-MGluPG-modified liposomes.
Methods Briefly, eggPC, MGluPG, cholesterol and DOTAP were dissolved in chloroform and dried to a thin membrane on a rotary evaporator. The dried lipid mixture was further hydrated in a low-pH solution (6 mM ammonium sulphate, pH 5.5) under a vortex mixer to form polydispersity vesicles. The liposomes were then extruded through a polycarbonate membrane with a pore size of 80 nm to reduce particle size and dialyzed in a neutral buffer (pH 7.4) to establish the pH gradient. DOX was loaded by incubating with preformed liposomes at 60° C for 30 min with intermittent vortexing and finally the mixture was eluted using a Sepharose CL-4B gel-filtration column to remove free DOX.
Results The LNPs synthesized in this procedure had a particle size of 168 ± 10.6 nm and a ζ potential of 5 ± 0.78 mV. Drug encapsulation efficiency (EE) was over 85%, meaning most DOX was encapsulated into the liposomes. The release of MGluPG-modified liposomal DOX in phosphate buffer (pH 5.3) was significantly higher than in PBS (pH 7.4) after 24 hours of incubation at 37° C. The MTT test further demonstrated that the IC_{50} of MGluPG-modified liposomes induced significantly less cytotoxicity. Data from the inhibition of tumour growth revealed MGluPG-modified liposomal DOX was both safe and inhibited tumor growth efficiently.

35 TRADITIONAL CHINESE MEDICINE (TCM) THERAPEUTIC EFFECTS ASSESSMENT IN BREAST CANCER PATIENTS

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Objectives In China, the incidence of breast cancer is relatively high, and the peak incidence later in life. Traditional Chinese medicine (TCM) has become well known worldwide for its significant role in preventing and treating cancer. In the present study, we investigated the efficacy of TCM Xiaozhengshugan recipe as an adjunctive therapy in breast cancer.
Methods This was a prospective, randomized, controlled trial. A total of 72 breast cancer patients were randomized into an observation group (Western medicine treatment combined with TCM Xiaozhengshugan recipe, n = 38) and a control group (Western medicine only with no TCM therapy, n = 34). The effectiveness of therapy for breast cancer was evaluated.
Results The study demonstrated that the Xiaozhengshugan recipe could relieve clinical symptoms and improve quality of life (QoL). QoL scores in both groups were higher than before treatment ($p < 0.01$). The improvement in Chinese medical symptoms in the observation group was significantly better than in the control group ($p < 0.05$). CA153, CEA and CA125 levels were decreased in both groups after therapy compared to before ($p < 0.05$, respectively). None of the patients died during the follow-

up period. In the control group, five patients experienced a recurrence of disease and nine patients had metastases, with a median disease-free survival (DFS) of 5.7 years. The rate of recurrences and metastases in the observation group was lower than in the control group, and the DFS was longer, but there were no significant differences between the two groups ($p < 0.05$).

Conclusions TCM combined with Western medicine can relieve the clinical Chinese medical symptoms of breast cancer, promote QoL, and decrease CA15-3, CEA and CA125 levels, but shows no efficacy in preventing or delaying recurrence and metastasis.

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36 STUDY ON THE TASTE-MASKING PERFORMANCE OF MESOPOROUS MOLECULAR SIEVES

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Objectives Patient medication compliance can be seriously affected by a bitter taste. There are various taste-masking agents, but they urgently need to be improved. Mesoporous molecular sieves are a type of 3-dimensional nanostructure that has a regular pore diameter (2–50 nm), has a large surface area, and is nontoxic. These structures are widely used in biomedicine but their application in the drug taste-masking field has not previously been reported. The objective of this investigation was to prepare three different mesoporous molecular sieves (MCM-41, MCM-48 and HMSS) and to determine their masking properties through volunteer tasting.

Methods MCM-41, MCM-48 and HMSS were synthesized using a hydrothermal method. The bitter-tasting drug cetirizine (CTH) was used as the model drug. CTH-sieve composites were prepared using the impregnation method and the composites were characterized by means of XRD, FTIR, nitrogen physical adsorption and TGA. Three commonly used taste-masking agents were used as contrast to mask the bitter flavor of CTH.

Results MCM-41, MCM48 and HMSS showed a large CTH loading capacity of 25.12%, 32.91% and 50.00%, respectively, and effectively reduced the bitter taste of CTH by covering the oral mucous membrane thus reducing irritation.

Conclusions The pore structure and large surface area of the sieves improved taste-masking efficiency compared with common taste-masking agents. Mesoporous molecular sieves have the potential to increase the efficacy of taste-masking agents.

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Natural Medicines

37 OPTIMIZATION OF SUPERCRITICAL CARBON DIOXIDE EXTRACTION CONDITIONS OF SEMEN CASSIAE VOLATILE OIL USING RESPONSE SURFACE METHODOLOGY AND ANTIMICROBIAL ACTIVITY DETECTION

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Objectives The objective of this project was to study the process of extracting Semen cassia. The volatile components of Semen cassia were analyzed using supercritical CO_2 extraction (SCDE). Based on a single factor experiment, response surface methodology was used to investigate the extraction of volatile oil. According to the fitted curves under different conditions, the effects of pressure, temperature and time on extraction and interactions between various factors were determined. Antimicrobial activity was also measured.

Methods A Box-Behnken central composite design method was used based on single factor experiments. The influence of extraction temperature, extraction time and extraction pressure on extraction yield was studied. The response surface method was employed to analyze the results of experiments. The disk diffusion method was used to detect the antimicrobial activity of Semen cassiae volatile oil.

Results The results indicated that the optimum extraction conditions were as follows: extraction temperature 51°C, extraction time 3.22 hours and extraction pressure 25 MPa. Extraction yield reached 2.34%. The volatile oil of Semen cassiae extracted from the tested strains showed antimicrobial activity, with MIC values ranging from 2.5 to 5 mg/mL.

Conclusions SCDE is a stable and efficient process. Semen cassiae volatile oil had antimicrobial activity which could provide a theoretical basis for application of this oil.

38 ANALYSIS OF THE ANIMAL MODEL OF TINEA CORPORIS

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Objectives To explore common modeling methods and problems with the tinea corporis animal model.

Methods We summarize the classification and pathogenesis of the tinea corporis animal model, and analyze the methods used to establish the model and the characteristics of the model.

Results Animal models of tinea corporis are mainly established using the scratch method, sandpaper method, animal skin wound puncture, and inoculation with fungal strains such as *Trichophyton mentagrophytes* and *Trichophyton rubrum*. The most