

Extraction of GBH Film Medicine and Influence on Quality Evaluation of The Film

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Abstract. To know the extraction effects of GBH film medicine and the influence on film quality evaluation. Ultrasonic extraction and reflux extraction were used to extract the two methods with the traditional water decocting method to contrast. They were used to determining the content of total flavonoids. The same method was used to separate the root of the main medicinal herbs and the decoction of the water decoction of the other drug powder. They were used to determine the content of total flavonoids. The effect of extraction method on the preparation of membrane was investigated. The membrane preparation, evaluation and flexibility, respectively, film-forming property, smoothness and disintegration time are used to evaluating separately the effect of extraction method. The results showed that the extraction effect of 70% ethanol concentration of total flavonoids. The best extraction method had no effect on the film quality initial evaluation. This experiment provides a method for membrane extraction agent, has a certain practical significance.

1. Introduction

Membrane refers to the drug and the appropriate film-forming materials made of film-like preparation. The commonly used film-forming materials are non-toxic, non-irritating, stable nature, good film-forming material, and PVA is mostly used as a film-forming material¹. From the appearance, film can be divided into 3 kinds, which are single-layer film, multi-layer film and, composite film. Membrane agent with a simple production process, which is easy to automate and sterile production, easy to use, and suitable for a variety of routes of administration, drug content is accurate, stable quality, can be made of multi-layer agent and to avoid incompatibility, but also made different release rate of the preparation, small size, light weight, easy to carry, transport and storage advantages². The application site can also be divided into several kinds: oral membrane agent used in oral ulcers; nasal cavity agent, for nasal bleeding and nasal ulcer have a significant effect; eye coating agent, compared with the classic ophthalmic preparations, drug viscosity, not easy to overflow, but also reduce the loss of tears in the nasolacrimal duct; vaginal, cervix with the film, used in gynecological diseases; implanted type of agent, direct implantation of the body acupuncture points, and transdermal administration³.

1.1. development of oral membrane agent

Commonly used oral agents are used in oral ulcers. With the gradual improvement and development of Chinese medicine formulations, the development of a new type of film, often due to postoperative oral



due to the wound, plywood and other fixed objects and other reasons caused by mouth opening is difficult to heal, and may cause infection a series of problems, so people choose to use antibiotics to avoid infection, but the improper use of antibioticst will make the infection worse, and oral agent can try to avoid this problem, because the film can avoid the first effect and speed up wound healing⁴. Postoperative pain will affect the body of multiple organs, often caused by visceral discomfort, mainly in the body's internal blood pressure rise, affecting the heart rate, leading to shortness of breath and so on. The prescription of the film to slimming myogenic muscle can play a sedative analgesic, the role of bleeding. Greatly reducing the pain of patients after surgery to speed up wound healing, thereby greatly reducing the incidence of adverse reactions.

1.2. To the pharmacological effects of saprophytic

To saprophytic myofibroblasts through the role of traditional Chinese medicine, so that has been rotten and necrotic tissue and other types of pathological tissue shedding, or will be converted into a drainage of the pus, which in the local wound to form a positive balance and relatively clean microenvironment, traditional Chinese medicine for the wound healing to provide enough blood to the body fluid, in order to ultimately promote wound healing^{5,6}. There are growth factors involved in all stages of wound healing. It is not only involved in inflammatory cell chemotaxis and promote fibroblasts, vascular endothelial cell proliferation and matrix formation, but on the late tissue modification also has an important impact, plays an important role in starting, regulating and control, and fibrous cells can be increased speed up wound healing. At the same time to saprophytic muscle method can promote wound blood circulation, regulate immune function, change the trace element content, and improve the pH environment in order to facilitate the repair of the wound. And some to rot myogenic drugs can increase the number and permeability of capillaries, change the local microenvironment, enhance the local resistance, affect the production of fibronectin and collagen synthesis. Two-way regulation of trauma in the growth factor of the various stages, so that it is conducive to the direction of wound healing.

According to the clinical observation of Li Ying⁷, it's more clearly understand the phlegm to rot saprophytic cream can cool blood circulation, promote blood circulation, eliminate swelling and pain, and have a better effect in saprophytic myogenic work, burns, postoperative infection, and ulcer. The *Staphylococcus aureus* is a common pathogen of various types of internal fixation chronic infection, easy to adsorb on the surface of biological material growth, and the formation of biofilm, the establishment of such biofilm makes these bacteria can resist the killing effect of antibiotics, resulting in drug resistance, but to saprophytic leptophobia can prevent bacteria on antibiotic resistance. And the prescription of the drug to some of the chronic infection of bacteria can inhibit the role, so as to achieve antibacterial effect⁸.

2. Experiment

Oral surgery often have a lot of problems need to be resolved, the use of blood, aloe, berberine, *Rhizoma Drynaria*, *Bletilla striata* and *Astragalus* made to saprophytic make film agent, film non-toxic, non-stimulating, stable nature, can be avoided the first effect, and these six drugs in pharmacology can be on the wound after surgery to stop bleeding, anti-inflammatory. Anti-bacterial and promote the role of wound healing, because only in anesthesia for some time, the prescription can also calm the role of pain. The extracts were extracted from the blood, aloe, berberine, rhizome, bark extract, *bletilla striata* and *astragalus*, and extracted with other decoction. The total flavonoid content in the solution is compared with the extraction concentration that is more suitable for this.

2.1. test and equipment

Anhydrous ethanol, CMC-Na, PVA, glycerol, liquid paraffin, baicalin (110715-201403) electronic constant temperature electric sets (98-1-B type), electric constant temperature water bath (HWS- 12), ultrasonic cleaner (SK3310HP), ultraviolet spectrophotometer (JH-B-05-12 type), electronic analytical

balance, vacuum oven (DZF-6030A type) Another condenser 1, beaker, Bottle, round bottom flask two, pipette, color tube 3, test tube 1 and other experimental equipment. Herbs: blood, aloe, berberine, Rhizoma Drynaria, Bletilla striata, Scutellaria.

2.2. Methods and Results

2.2.1. Extraction of herbs The ratio of the drug preparation for the Coptis: Rhizoma Drynariae:

Bloody: Aloe vera: Scutellaria = 3: 1.5: 2: 0.5: 3: 3, the use of electronic analytical balance weighing, mixed for the experiment. Here are the three ways to extract:

- Reflux extraction: respectively, the preparation of 70%, 50% and 30% of the three ethanol concentration, the use of analytical balance weighed 1g mixed drug powder, into the round bottom flask, the round bottom flask into the heating sleeve, connecting the condenser, 50 mL of ethanol was poured into the round bottom flask from the upper end of the condenser tube and heated to reflux for 3 h. After heating and refluxing, the solution was poured into a beaker and allowed to stand to obtain a solution.
- Ultrasonic extraction: 70%, 50%, 30% of the three ethanol concentration, 50mL beaker by adding 50mL of ethanol, add 1g mixed powder, glass rods stirring, into the conical flask, the operating frequency for 15 min. The solution was poured and allowed to stand for preparation.
- Decoction: take the mixed drug powder into the 100mL beaker, pour 50mL of distilled water, heating in a 60 °C water bath for 1h, filter, prepared liquid, standing, for the preparation of film.

The content of 70% ethanol was 10.14%, and the content of ultrasonic extraction was 3.58%, and the content of ultrasonic extraction was higher than that of reflux.

Table1. Mixed Flavors Total Flavonoids Content

	reflux			ultrasound			decoction
	70%	50%	30%	70%	50%	30%	
Absorbance	0.649	0.549	0.351	0.661	0.533	0.359	0.262
Total flavonoid content (%)	9.94	8.30	5.04	10.14	8.03	5.17	3.58

2.2.2. Scutellaria baicalensis extract and mixed with other powder decoction

According to the proportion of mixed powder, the amount of 0.231g of Huangqin powder was taken and extracted by three methods above 2.2.1. The other drug powder was weighed 0.769g for decoction, then mixed with the extract of Scutellaria baicalensis to determine its total flavonoid content .

Table2. Mixed Flavors Total Flavonoids Content

	reflux			ultrasound			decoction
	70%	50%	30%	70%	50%	30%	
Absorbance	0.662	0.554	0.356	0.672	0.547	0.368	0.266
Total flavonoid content (%)	10.16	8.38	5.12	10.32	8.26	5.09	3.64

2.2.3. Identification of total flavonoids

Hydrochloric acid - magnesium powder reaction, take a small amount of test solution placed in the test tube, add a little magnesium powder shaking, and then drop a few drops of concentrated hydrochloric acid, observed that the solution becomes red, hand can feel the heat. Compared with the content of total flavonoids after extraction of Scutellaria baicalensis, the maximum extraction content of ultrasonic 70% was 10.32%, and the best extraction rate was 3.64%

2.3. Methodological study

The two extraction methods and the ethanol concentration were used. The mixed powder solution extracted with ethanol at 70% concentration was the sample No.1, and the scutellaria solution extracted by ultrasonic at 50% ethanol was tested.

- Preparation of standard curve: When baicalin was used as reference substance, UV spectrophotometry should be used to determine the content of total flavonoids in the sample at 278 nm⁹. Accurately weighed dry to constant weight of baicalin reference substance 5mg, set 50 mL volumetric flask, through the extraction concentration of absorbance can push the 70% concentration better, so the choice of 70% concentration of the control solution, add a small amount of 70% ethanol dissolved After the constant volume to the scale, shake, made of 0.1mg / mL standard solution, spare. The baicalin reference substance solution was removed 1.0,2.0,3.0,4.0,5.0 mL, set 10 mL colorimetric tube, with 70% ethanol to the mark, shake, placed 5min, measured at 278 nm. The linear regression equation was obtained as follows: $y = 0.0608x + 0.0445$, $r = 0.9993$.
- Precision test: precision drawing baicalin reference substance solution 1 mL in the colorimetric tube, set 10 mL volumetric flask, diluted with 70% ethanol to the scale to 70% ethanol blank at 278 nm, repeat the determination 6 times, the RSD was 0.132%, indicating that the experimental precision is good.
- Stability test: accurately weighed scutellaria extract 1mL in the colorimetric tube, take two kinds of test products, measured once every 1h absorbance value, measured 6 times. RSD values were 0.363% and 0.512%, respectively, within the required range, indicating that the two samples within 6h stable nature.
- Repeatability test: the pipette with a parallel transfer of the test solution 1 mL in the colorimetric tube, the precise absorption of 70% ethanol as a blank solution at 278nm wavelength measured absorbance value, repeat the determination of 6 times, The RSD values were 1.72% and 1.23%, respectively, indicating that the method was reproducible.
- Sample recovery rate test: precision to take the test sample 1 and 2 solution 1mL in 6 colorimetric tubes, and then were added baicalin reference substance solution (0.1 μ g / mL) 2 ml, at 278nm wavelength The average recoveries were 98.81% and 99.21%, respectively, and RSD were 0.85% and 1.32%, respectively, which indicated that the recovery rate was good.

2.4. preparation of the film

CMC-Na and PVA dissolved in 90 °C, adding glycerol, smear a small amount of liquid paraffin, into the liquid, standing defoaming, drying in the oven at 60 °C, that is film agent.

2.5. Preliminary evaluation of film

According to the requirements of its delicate, flexible, film-forming, smooth, each index in accordance with 1 to 5 points on the film score. According to the score we can see that the concentration of ethanol on the preparation of film basically does not affect the results shown in Table 2-1.

Table 3. Film Concentration under each concentration and method

	Delicate	Flexibility	Film forming	Smoothness	Total score
Mixed reflux 70%	3	3	3	2	11
Mixed reflux 50%	1	4	5	2	12
Mixed reflux 30%	3	3	4	4	13
Single mention reflux 70%	2	3	4	4	13
Refit 50%	3	3	2	4	12
Single mention reflux 30%	2	4	3	3	12
Mixed ultrasound 70%	3	2	3	2	10
Mixed ultrasound 50%	4	2	1	3	10
Mixed ultrasound 30%	1	4	3	2	10
Single mention ultrasound 70%	3	2	4	2	11
Single mention ultrasound 50%	2	5	4	1	12

Single mention ultrasound 30%	3	1	3	5	12
Mixed decoction	2	3	3	2	10
Only to mention water fried	2	4	4	2	12

2.6. disintegration time

The film was disintegrated in the above-mentioned experiment, and the film was placed in a 50 mL beaker equipped with distilled water and heated in an electric hot water bath at 37 ° C while stirring with a glass rod to produce a vortex. The dissolution time of the film was observed by observing the disintegration time of the film, and the disintegration time of the film was determined according to the experiment. The time of disintegration of the film was about 210s. At the time of disintegration, the concentration of ethanol had no effect on the disintegration time of the membrane.

3. Conclusion

Compared with the extraction of *Scutellariae*, the mixed drug powder has a relatively low total flavonoid content. The absorbance values of *Scutellaria baicalensis* alone were determined when the absorbance was measured, which was greater than the absorbance value at the corresponding concentration of the mixed drug powder. It was also higher than the absorbance value after the extraction of *Scutellaria baicalensis* with other powder decoction. This is due to berries and other herbs containing alkaloids can react with the total flavonoids, the total flavonoid content is low, the measured absorbance will be low. Ultrasonic extraction of the total flavonoid effect is better than the reflux, which is because the ultrasonic extraction can penetrate the medicine, so that herbs and solvent contact more closely. And the reflux extraction effect is better than the decoction method. This is because the flavonoids in *Scutellaria baicalensis* are easy to dissolve in ethanol, which increases the total flavonoid content, and therefore the higher the ethanol concentration, the greater the total flavonoid content. According to the comparison of the content of total flavonoids, the higher the ethanol concentration, the better the extraction effect is, the better the ultrasonic extraction is better than the reflux extraction and the water boiling method. Extraction concentration and extraction method had no effect on the initial evaluation of film quality. The experiment provides a basis for the preparation of film.

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