

Study of the activity of certain types of medicinal plant materials for their use
in the treatment of inflammatory periodontal diseases K.A.
Pupykina, S.V. Averyanov, E.V. Pupykina, I.V. Romeyko
(GBOU VPO "Bashkir State Medical University", Ufa)

The study of raw medicinal plants activity for application in treatment of inflammatory periodontitis
KA Pupykina, SV Averyanov, EV Pupykina, IV Romeiko GBOU
VPO "Bashkir State Medical University" (Ufa, Russia)

SUMMARY

The article provides information on obtaining extracts from some medicinal plants that are approved for use in medical practice on the territory of the Russian Federation and are recommended for use in dentistry. A comparative assessment of their antioxidant and antibacterial activity was carried out in order to substantiate the possibility of obtaining various compositions based on extracts and creating rational dosage forms for use in dental practice in the treatment of inflammatory periodontal diseases.

Keywords: medicinal plants, inflammatory diseases periodontium, antioxidant activity, antibacterial activity.

RESUME

The article presents information on making extracts of certain medicinal plants allowed for medical use in Russian Federation and recommended for use in stomatology. Comparative analysis of antioxidant and antibacterial activity for justification of the possibility to create various rational remedial forms based on extracts for application in stomatology in treatment of inflammatory periodontitis was realized.

Keywords: medicinal plants, inflammatory periodontitis, antioxidant activity, antibacterial activity.

Recently, the use of traditional methods of treatment with the use of medicinal plants and preparations based on them has been increasingly introduced in dentistry. The issues of prevention and complex treatment of inflammatory periodontal diseases are especially relevant in the practice of a dentist. The influence of local factors and a combination of their effects, a change in the general state against the background of changes in the body's reactivity is the main reason for the development of inflammatory-dystrophic changes in the periodontium, while microorganisms play an important role [1]. In the treatment of inflammatory periodontal diseases, a variety of synthetic drugs are widely used. However, with their pronounced therapeutic effect, they are not devoid of side effects, they have contraindications and restrictions for use. This determines the need to develop comprehensive approaches to their treatment, including the use of herbal medicinal products, which would make it possible to limit the antibacterial load and ensure detoxification of the body. In addition, medicinal plants have a wide range of therapeutic and prophylactic effects, have low toxicity, mild action, are able to quickly eliminate symptoms of exacerbation and have a general regulatory effect on the entire body [2, 3].

The aim of the research was to study the possibility of using herbal medicine in the treatment of inflammatory periodontal diseases.

Materials and research methods

The objects of the study were dry extracts obtained from the following types of medicinal plant materials: calendula flowers (flores Calendulae), St. John's wort (herba Hyperici.), Chamomile flowers (flores Chamomillae), Sage leaves (folia Salviae), Yarrow herb (herba Millefolii), Echinacea herb (herba Echinaceae). For the obtained extracts, antioxidant activity, assessed by their ability in vitro inhibit autooxidation adrenaline to an oxidation product with absorption in the 347 nm region, the formation of which occurs in the absence of additional sources of O₂ generation [4]. When processing the results, it was taken into account if the indicator of antioxidant activity is more than 10%, then plant objects

have high activity, and if less, then weak. Microbiological studies of infusions from certain types of medicinal plant materials were carried out using nutrient media for the cultivation of microorganisms, which were sown with a continuous lawn. After germination of cultures, disks made of sterilized filter paper, soaked in the studied preparations immediately before the experiment, were placed in Petri dishes, and then they were incubated in a thermostat (37 ° C) for 5 days. Control of the growth of microorganisms was carried out every 24 hours, noting the zones of inhibition of the growth of pathogenic microorganisms in comparison with standard phages (staphylococcal, coli-proteinaceous, *Pseudomonas aeruginosa*).

Results and its discussion

Medicinal plants have a general regulatory effect on the entire body, affect various links in the pathological process, which is especially important for the prevention and treatment of chronic diseases. In addition, the possibility of a rational combination of medicinal plants with each other and with synthetic drugs makes it possible to expand their therapeutic capabilities and reduce the frequency of side effects of drug therapy. The study of the antioxidant activity of extracts from some types of medicinal plant raw materials is of interest, since the development of many human diseases is accompanied by the activation of the process of free-radical lipid peroxidation, which is considered as a universal mechanism of damage to biological membranes and the use of plants and extracts with antioxidant activity.

Extracts were prepared from medicinal plant materials according to the following technology: the raw materials were poured with purified water in a ratio of 1:10, taking into account the water absorption coefficient, insisted on a boiling water bath for 15 minutes, cooled for 30 minutes, then filtered and a water extract was obtained, which was brought to the required volume and dried to constant weight at a temperature of 60–70 °. Evaluation of the antioxidant activity of the obtained extracts from the studied samples of medicinal plant materials was carried out in comparison with a drug with a pronounced antioxidant activity - ascorbic acid. The results of the study are presented in table. one.

Table 1

Indicators of antioxidant activity of medicinal plant extracts

№	Объекты исследования	Показатель антиоксидантной активности, %
1	Календула лекарственная	37,1
2	Зверобой продырявленный	48,6
3	Ромашка лекарственная	51,3
4	Шалфей лекарственный	35,7
5	Тысячелистник обыкновенный	40,2
6	Эхинацея пурпурная	26,0
7	Аскорбиновая кислота	62,5

Analyzing the results obtained, it can be noted that extracts from chamomile and St. John's wort have a more pronounced antioxidant activity, and extracts from yarrow, common sage, calendula and echinacea purpurea have a less pronounced, but also significant activity.

The antibacterial activity of certain types of medicinal plant materials has been studied. The effectiveness of the infusions of medicinal plants was assessed by the zone of inhibition of the growth of pathogenic microorganisms, in comparison with standard phages. The results of the study are presented in table. 2. When evaluating the results obtained, it was found that the investigated extracts from medicinal plants, according to the severity of antibacterial activity, can be arranged in the following order in descending order: official sage > St.

The possibility of obtaining on the basis of extracts of various compositions and creating rational dosage forms for use in dental practice in the treatment of inflammatory periodontal diseases was also investigated.

Conclusions:

1. Received and studied extracts from plant raw materials: calendula flowers (flores Calendulae), St. John's wort herb (herba Hyperici.), chamomile flowers (flores Chamomillae), sage leaves (folia Salviae), grass yarrow (herba Millefolii), Echinacea herb (herba Echinaceae).

2. A comparative assessment of the antioxidant and antibacterial activity of plant extracts and revealed extracts showing more pronounced activity, which are planned to be used for further research on the development of dosage forms for the treatment of inflammatory periodontal diseases.

table 2

Evaluation of microbiological activity of certain types of medicinal plant raw materials

Наименование ЛРС	Зоны задержки роста микроорганизмов в мм					
	St. aureus	Kl. pneumonie	Ps.aeru-ginosa	Pr. vulgaris	E. Coli	Candida
Цветки календулы	7,66 ± 0,13	8,50 ± 0,18	7,92 ± 0,14	8,56 ± 0,18	7,43 ± 0,15	6,48 ± 0,12
Трава зверобоя	11,16 ± 0,23	12,26 ± 0,22	10,95 ± 0,23	10,31 ± 0,20	11,47 ± 0,28	10,78 ± 0,30
Цветки ромашки	10,58 ± 0,13	8,74 ± 0,17	9,37 ± 0,28	10,76 ± 0,15	9,08 ± 0,21	9,64 ± 0,25
Листья шалфея	12,34 ± 0,23	11,45 ± 0,36	9,57 ± 0,16	10,82 ± 0,13	12,66 ± 0,25	10,16 ± 0,12
Трава тысячелистника	9,58 ± 0,15	8,94 ± 0,30	7,75 ± 0,21	9,69 ± 0,16	10,74 ± 0,20	8,18 ± 0,15
Трава эхинацеи	6,83 ± 0,12	8,27 ± 0,15	6,25 ± 0,10	8,56 ± 0,18	7,43 ± 0,15	6,54 ± 0,13
Фарг-стандарт	Стафилококковый	11 мм				–
	Коли-протейный		13 мм		13 мм	13 мм
	Синегнойный			10 мм		–

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Author's address

D. farm. n. Pupykina K.A., Professor of the Department of Pharmacognosy with a course of botany and the basics of phytotherapy, Bashkir State Medical University, Ministry of Health of the Russian Federation.
pupykinak@pochta.ru

Study of the activity of some types of medicinal plant materials for their use in the treatment of inflammatory periodontal diseases / K.A. Pupykina, S.V. Averyanov, E.V. Pupykina, I.V. Romeiko // Traditional Medicine. - 2014. - No. 4 (39). - S.32-34.

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