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ANTIOXIDANT ACTIVITY OF A DECOCTION OF SANDY IMMORTAL FLOWERS AND THE ROOT OF MALT AND REAL

Kaldibaeva A. O., Yinusov A.A.

Tashkent Pediatric Medical Institute. Uzbekistan.

Resume

The effect of a decoction of liquorice root and an infusion of Helichrysum flowers on the processes of lipid peroxidation in chronic toxic hepatitis was studied. It has been established that a decoction of liquorice root and an infusion of Sandy immortelle flower in chronic poisoning with heliotrin has an antioxidant effect. In terms of hepatoprotective action, herbal preparations are not inferior to the well-known hepatoprotector carsil.

Key words: decoction of liquorice root, infusion of Sandy immortelle flowers, chronic toxic hepatitis, conjugated dienes, dienketones.

АНТИОКСИДАНТНАЯ АКТИВНОСТЬ ОТВАРА ИЗ ЦВЕТКОВ БЕССМЕРТНИКА ПЕСЧАНОГО И КОРНЯ СОЛОДКИ И НАСТОИ

Калдибаева А. О., Юнусов А. А.

Ташкентский педиатрический медицинский институт. Узбекистан.

Резюме

Изучено влияние настоя из цветков бессмертника песчаного и отвара из солодкового корня на процессы перекисного окисления липидов при хроническом токсическом гепатите. Установлено, что отвар из солодкового корня и настой из цветков бессмертника песчаного при хроническом отравлении гелиотрином оказывает антиоксидантное действие. По гепатопротекторному действию растительные препараты не уступают известному гепатопротектору карсилу.

Ключевые слова: отвар из солодкового корня, настой из цветков бессмертника песчаного, хронический токсический гепатит, конъюгированные диены, диенкетоны.

ЎЛМАС ЎТ ГУЛЛАРИ ВА ЧУЧУКМИЯ ИЛДИЗИ ҚАЙНАТМАСИ ДАМЛАМАСИНИНГ АНТИОКСИДАНТ ТАЪСИРИ

Калдибаева А.О., Юнусов А.А.

Тошкент Педиатрия Тибиёт Института. Узбекистан.

Резюме

Ўлмас ўт гули дамламаси ва чучукмия илдизи қайнатмасининг сурункали токсик гепатитда ёғлар перексидланит зсараёнига таъсири урганилган. Олинган тазкирибаларга кура, чучукмия илдизи қайнатмаси ва ўлмас ўт гули дамламаси гелиотрин билан чақирилган сурункали захарланишида оксидланишига қарит таъсирга зга эканлиги аниқланди. Шифобахуи ўсимликлардан тайёрланган қайнатма ва дамлама зкигарни ҳимоя қилиш таъсири бўйича, гепатопротектор карсил препаратидан қолишмаслиги келтирилган.

Калитли сўзлар: чучукмия илдизи қайнатмаси, ўлмае ут гули дамламаси, сурункали токсик гепатит, конъюгирланган диенлар, диенкетонлар.

Introduction

It is known that herbal medicines have been used for the treatment of chronic viral hepatitis and other liver diseases for more than 30 years, and practical medicine has a fairly wide arsenal of various antioxidant medicines. However, when using synthetic drugs, various side effects and complications are often

observed, which largely limit their successful use in the clinic.

All this necessitates the search and study of new highly active substances, especially on tire

basis of herbal remedies, which, in comparison with synthetic ones, have low toxicity. In this regard, compounds isolated from the liquorice root are of great interest. Interest in liquorice as an extraordinary and multifaceted plant persists in our time, since liquorice root preparations are successfully used for various diseases [7]. The main medicinal properties of liquorice root are mainly due to glycyrrhizic acid and glycyrrhizic acid aglycone. These glycosides and their various derivatives have a wide spectrum of biological activity. They possess estrogenic, anti-inflammatory [5], anti-ulcer [2], antiallergic [14], antitoxic and hepatoprotective [8] effects and exhibit antiviral activity [6]. The introduction into practice of new drugs based on liquorice root, is promising due to their low toxicity and the absence of unwanted side effects. Sandy immortelle is a perennial herb 30-40 cm high, belongs to the Asteraceae family. Flavonoids and flavonoglycosides are found in flowers. Flowers have choleric properties. They are used for liver diseases, cholecystitis, and hepatocholecystitis

Several plant extracts used to treat gastrointestinal and biliary disorders contain hepatotoxic alkaloids and are more harmful than beneficial. However, a number of extracts contain substances that have antioxidant, anti-fibrotic, antiviral and anticarcinogenic properties. One of these herbal remedies is glycyrrhizin, a triterpene saponin that is part of an aqueous extract of liquorice root. Therefore, the available data demonstrate the positive effect of glycyrrhizin in chronic viral liver diseases and its hepatoprotective properties.

However, it is rather difficult to judge the effectiveness of glycyrrhizin in the treatment of chronic viral hepatitis, given the virtual absence of randomized placebo-controlled clinical trials.

Despite this, glycyrrhizin certainly deserves attention and further research.

The aim of this work is to study the effect of an infusion of immortelle flowers and a decoction of liquorice root on the products of lipid peroxidation and the activity of enzymes of the antioxidant system in chronic toxic hepatitis.

Materials and methods

The experiments were carried out on 30 male rats weighing 150-180 g. Saline was injected into intact groups of animals. In the remaining groups of animals, chronic toxic hepatitis was induced by subcutaneous administration of heliotrin at a dose of 10 mg / 100g during the first week (Abdullaev N.K. et al. 1989). During the second week, his dose was reduced to 7.5 mg / 100g, and in the subsequent third week, to 5 mg / 100g. For prophylactic purposes, rats in the control and experimental groups for one month orally through a probe in a volume of 1 ml / 100 g were injected with a decoction of liquorice root (first group), an infusion of

immortelle flowers (second group) at a concentration of 1:10, and hepatoprotector was also administered orally, carsil at a dose of 100 mg / kg for one month (third group). The parameters in rats with chronic toxic hepatitis served as a control.

In the liver homogenate, the content of diene conjugates (Shilina N.K. et al. 1978), malonic dialdehyde using thiobarbituric acid (Krichevskaya A.A. et al. 1976), as well as the activity of the main enzymes of the antioxidant system, superoxide dismutase (SOD) and catalase were determined. (CT) (Gurevich V.S. et al. 1990; Korolyuk M.A. et al. 1988). Statistical processing of the data obtained was carried out according to the method of Strelkov R.B. (1986).

Results and discussion

In animals with chronic toxic hepatitis, general weakness, disheveledness and a decrease in coat gloss, abdominal distension, and ascites were noted. Death occurs in 40% of cases. Under the influence of hepatotoxin-heliotrin, along with the disturbance of the general condition in rats, the content of diene conjugates and malonic dialdehyde increases in the liver tissue. Simultaneously with the accumulation of lipid peroxidation products, the activity of SOD and CT decreases by 64% and 42%, respectively, in comparison with similar parameters in intact animals. A decrease in the activity of enzymes of the antioxidant system leads to the formation of a superoxide anion. This radical, reacting with hydrogen peroxide, increases the formation of reactive oxygen and hydrophilic radicals, causing destruction of hepatocyte biomembranes and the development of protein and fatty degeneration of liver cells [3]. These data indicate that heliotrin, like other hepatotoxins, has a prooxidant effect, leading to disruption of metabolic processes in the liver.

The simultaneous use of medicinal plants with heliotrin leads to a decrease in the disorders of the antioxidant system and inhibition of the enhancement of lipid peroxidation. As a result of the introduction during the month of a decoction of liquorice root and an infusion of sandy immortelle flowers, the content of conjugated dienes decreases by 22% and 25%, respectively, conjugated dienketones - by 32%, malonic dialdehyde by 34% and 35% Under the influence of carsil, the activity of these enzymes is increased by 71% and 36%.

If we take this effect into account, then liquorice root and flowers of sandy immortelle, similarly to silibor, have an antioxidant effect and prevent an increase in the intensity of lipid peroxidation. (Table 1.)

The antioxidant effect of drug plants is apparently associated with an increase in the activity of enzymes of the antioxidant system, since the composition of liquorice root contains glycyrrhizic acid (8-24%), flavonoids (4.3%) and organic acids (4.6%) [2]. The medicinal properties of liquorice root remain mainly due to

the content of glycyrrhizic and aglyconglyceretic acid. These glycosides and their various derivatives have a wide spectrum of biological activity.

Most of these substances have direct and indirect antioxidant effects. Probably, these substances lead to an increase in the activity of enzymes and an increase in the function of the antioxidant system of the body. In addition, the studied medicinal plants have anti-inflammatory, choleric, immunomodulatory properties and increase the regenerative potential of liver cells (Saratikov A.S. et al. 1991).

Table №1. Influence of liquorice root and immortelle flowers on lipid peroxidation indicators. M ± m (p = 0.05)

Experimental conditions	Conjugated dienes, D / 1 mg lipid	Conjugated dienketones, D / 1 mg	MDA lipid, nmol / 1 g tissue	SOD, conventional units / min mg protein	Catalase, nmol / min mg protein
Intac group	0,45040,023	0,22440,014	36,141,01	J ,4540,08	0,4340,016
Control group (chronic hepatitis caused by heliatriin)	0,73640,0217	0,39740,028	71,341,14	0,52±0,042	0,2540,019
decoction from liquorice root	0,57240,028	0,26540,024	47,241,03	0,8740,037	0,3440,019
Infusion of sandy immortelle flowers	0,55040,016	0,26840,015	46,740,94	0,8740,063	0,3340,013
Carsil	0,56040,024	0,25440,021	46,841,74	0,8940,07	0,3440,02

The antioxidant activity of carsil is less expressed. The results obtained indicate that these natural substances have a unidirectional antioxidant effect.

Glycyrrhizin is a calcium and potassium salt of the three basic glycyrrhizic acid, aglycone, which is glycyrrhizic (glycyretic) acid. Glycyrrhizin has anti-inflammatory, antiallergic, antiviral, mineralocorticoid, antiulcer, hepatotropic and immunomodulatory effects. Of particular interest is its antiviral and immune effects.

It is known that glycyrrhizin stimulates the formation of interferon gamma, which in turn activates macrophages and B cells, enhancing phagocytosis and antibody production, and activates NK cells. In a number of works, there are indications of the inhibitory effect of glycyrrhizic acid directly on the DNA and RNA of viruses, which causes the inactivation of viral particles, their suppression, and their introduction through the membrane into the cell, a violation of the synthesis of new structural components of viruses.

An important property of glycyrrhizin, which partly explains its positive effect on the course of chronic hepatitis, is the ability to suppress the formation of free

radicals and the production of lipid peroxides.

It is known that in chronic liver diseases of various origins, the activity of antioxidant defense enzymes decreases, which is associated with the activation of lipid peroxidation processes. The course and severity of damage to hepatocyte membranes depends on the enhancement of lipid peroxidation and is accompanied by enzymatic deficiency, impaired cell division, leading to their death. For the treatment of chronic hepatitis, various drugs that have a hepatoprotective effect are used (11). For example, such drugs as Essentiale, Essel Forte, Phosphagliv, Apcosol, Herbion, Legalon, Liv-52,

Holagol, Carsil, Hofitol, Silibor, etc. However, the arsenal of these drugs is small and does not always satisfy the needs of clinicians. Some hepatoprotective agents cause side effects of varying degrees; in addition, they are all imported. In this regard, tire pharmacotherapy of chronic liver diseases should be complex and help correct multifactorial changes in various links of pathogenesis.

Conclusion

1. In chronic toxic hepatitis caused by heliotrin, there is an increase in the processes of lipid peroxidation and a decrease in the activity of specific enzymes SOD and KT.

2. Preventive administration of medicinal plants - liquorice root, sandy immortelle leads to inhibition of lipid peroxidation processes and activation of antioxidant enzymes of the body.

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