

The use of beebread–honey mixture in the treatment of liver diseases in alcohol-dependent patients

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Liver disorders are associated with the high-fat diet, high cholesterol levels excessive alcohol consumption, and hepatic viruses.

The objective of the current study was to determine the effect of beebread mixed with honey on the hepatic function and blood parameters in alcohol abuse patients suffering from chronic hepatitis.

Materials and methods. Eighteen patients (5 females and 13 males) aged 19–69 years were involved in the study on chronic hepatitis treatment. Fifteen patients were treated in hospital after flare-up of alcohol-induced hepatitis; in one patient, liver disease was caused by obesity, and in another it was drug-induced. Patients' blood samples were analysed for erythrocytes, hemoglobin, leukocytes, C-reactive protein (CRP) glucose, and bilirubin, liver enzymes aspartate aminotransferase (AST) and alanine aminotransferase (ALT). The patients received medical treatment with Hepatil and the nutritional supplement Livosan containing 83.33 mg milk thistle (*Silybum marianum*) extract produced by the Lithuanian pharmaceutical company "Aconitum", and beebread mixed with honey (1 : 2) 15 grams twice a day after meal. The data were compared with those of the control group (4 females and 6 males), treated with medicaments only. The average treatment period was 5 weeks.

A statistically significant reduction in CRP, AST, bilirubin and a trend towards the reduction of ALT levels after treatment were recorded for the group of patients who had received medicaments, Livosan and bee bread mixed with honey. Beebread used together with medicaments and Livosan exerted a hepatoprotective effect and improved liver function.

Introduction

The World Health Organization has reported alcohol-related diseases to be the third cause of death and disability in most of developed countries and one of the leading causes in several of the developing countries of Central and South America, Eastern Europe, and East Asia [1]. Liver damage in alcohol abuse patients depends on the amount and duration of alcohol consumption, genetic factors and weight, as well as on the stage of fatty liver [2, 3]. The data have shown that a severe liver disease develops only in 20–30% of long-term alcohol abusers [4]. Overweight alcoholic people are more subject to developing cirrhosis than those of a normal weight. Therefore, it is important that people with alcoholic liver disease (ALD) maintain normal weight levels [5]. Alcohol fatty liver diseases (AFLD) are associated with ethanol consumption of over 20 g for women and 30 g for men daily [6].

Oxidative stress is a major feature of alcoholic steatohepatitis and one of the biochemical processes involved in the non-alcoholic fatty liver disease (NAFLD) pathogenesis [7, 8]. The antioxidant capacity of the liver

decreases when steatosis progresses to steatohepatitis. The activity of two major enzymes – catalase (CAT) and superoxide dismutase (SOD) – responsible for the antioxidant protection of liver decreases by 64% and 48% in the serum of patients with steatohepatitis as compared with that of controls [9]. In the case of alcohol-induced steatohepatitis, cytochrome P-4502E1 (CYP2E1) is able to stimulate lipid peroxidation and produce free radicals and reactive intermediates. The liver becomes more susceptible to oxidative stress [10, 11].

The treatment of alcohol-induced liver disease (ALD) is complicated, and the problem still has not been solved [12]. The pharmacological treatment of alcohol liver disease is associated with the substances that affect the formation of free radicals. Plant polyphenols have antioxidant properties that are beneficial for the treatment of liver diseases. Extract from milk thistle (*Silybum marianum*) seeds contains about 65–80% of silymarin (a flavonolignan complex) and 20–35% of fatty acids [13]. Silymarin extract acts as an antioxidant, scavenging reactive oxygen species (ROS), inhibiting lipid peroxidation, and may be used as a supplement in the therapy of alcoholic liver cirrhosis [14, 15].

Clinical experiments suggest that antioxidants present in honey strengthen human blood plasma antioxidant and reducing capacities and increase plasma total phenolic content after consumption of honey 1.5 g/kg body weight [16]. Honey and beebread contain enzymatic and non-enzymatic antioxidants: glucose oxidase, catalase, ascorbic acid, flavonoids, also phenolic and other organic acids, producing nutritional and biological effects (antimicrobial, antioxidant, anti-inflammatory) [17–20]. A significant correlation has been found between the antioxidant activity, phenolic content of honey and the inhibition of the *in vitro* lipoprotein oxidation of human serum [21]. Fructose and glucose are the main sugars in all honey types [22]. Honey is recommended to be used before sleep. Only one tablespoon provides the human organism with glucose and fructose during sleep and nourishes the liver [23].

The objective of this study was to determine the effect of beebread mixed with honey on the hepatic function and indications of blood for alcohol abuse patients suffering from chronic hepatitis.

Materials and methods

Eighteen patients (5 females and 13 males) aged 19–69 were involved in the study of chronic hepatitis treatment. Fifteen patients were treated in hospital after a flare-up of alcohol-induced hepatitis; in one patient, liver disease was caused by obesity, and in one it was drug-induced.

All the patients felt pain in the abdomen, mostly under the right side ribs, nausea, vomited and felt bad, some of them had yellow eye sclera and skin. Liver echoscopy was prescribed for the patients after physical examination. The diagnosis of hepatitis was proved when the echograms showed the enlarged liver. The following analyses of peripheral blood were performed (erythrocytes, hemoglobin, leukocytes, C-reactive protein (CRP) and glucose). Liver enzyme test for aspartate aminotransferase (AST), alanine aminotransferase (ALT), also bilirubin was done. Special consideration was given to patients having other diseases; they were examined for complete clinical tests, because increased enzyme levels can be found in other diseases. Assessments of the general state of the patients and laboratory blood tests were carried out before and after treatment. The data were compared with those of the control group of 10 patients (4 females and 6 males) who had not received any plant drug and beebread treatment. Viral hepatitis was not confirmed for any of the additionally examined patients.

Characteristics of body weight of patients in the experimental group: two patients were obese, eight

patients overweight, one underweight, and the other had normal weight.

HEPATITIS TREATMENT. Patients received Hepatil 150 mg three times daily and Livosan (2–3 tablets per day). Livosan is a *nutritional* supplement produced by the Lithuanian pharmaceutical company “Aconitum“. The average treatment time was 5 weeks. The group of 18 patients was additionally treated with beebread mixed with honey (1 : 2), 15 g twice a day. A special diet was also prescribed.

Patients from the control group used medicaments and a special diet, but no Livosan and beebread. Livosan is a drug composed of different plants: extract of Milk Thistle (*Silbum marianum*) – 83.33 mg, extract of rootstock curcuma (*Curcuma longa*) – 50 mg, powder of rootstock curcuma – 58.33 mg, leaf powder of globe artichoke (*Cynara cardunculus* var. *Scolymus*) – 108.33 mg; powder of St. Benedict’s thistle (*Cnicus benedictus*) – 108.33 mg; powder of Oregon-grape (*Mahonia aquifolium*) rootstock – 108.33 mg; fruit powder of great morinda (*Morinda citrifolia*) – 66.66 mg.

Pollen composition in beebread mixed with honey (1 : 2), (%): spring rape (*Brassica napus* L. ssp. *oleifera annua* Metzg) – 33.3; red clover (*Trifolium pratense* L.) – 47.6; bluebottle (*Centaurea cyanus* L.) – 7.4; willow (*Salix alba* L., *Salix caprea* L.) – 1.6; white clover (*Trifolium repens* L.) – 4.2; caraway (*Carum carvi* L.) – 2.6; charlock (*Sinapis arvensis* L.) – 1.1; field bean (*Vicia faba*) – 1.1; burdock (*Arctium tomentosum*) – 1.1.

STATISTICAL ANALYSIS. The results were analyzed using ANOVA programme; statistically significant differences were considered at a level of $p < 0.05$.

Results and discussion

Our experimental evidence suggests positive effects in patients’ blood indications following 1.5 months of using medical and plant drug Livosan and beebread mixed with honey (1 : 2). Most of the patients did not feel any pain in the liver and had no other complaints. Yellowing of the eye sclera and skin pigmentation disappeared, and the size of the liver reduced in most of the patients. The health state of the patients improved. A statistically significant increase in erythrocytes, haemoglobin and the normal range of leukocytes and glucose were found in the blood tests (Table 1). Patients had lower erythrocyte counts before the treatment than the normal range, respectively $4.01 \cdot 10^{12}/l$. The normal level of erythrocytes was found after treatment – $4.46 \cdot 10^{12}/l$. The normal level of erythrocytes in one microlitre of blood is 4.7 to 6.1 million for males and 4.2 to 5.4 million for females*.

Table 1. Dynamics of blood indicators of two groups of patients treated for hepatitis

Tests	Patients treated with medicaments and beebread–honey mixture (N = 18)					Patients treated with medicaments (N = 5)				
	Erc, 10 ¹² /l	Hb, g/l	Leuc, 10 ⁹ /l	Gluc, mmol/l	CRP, mg/l	Erc, 10 ¹² /l	Hb, g/l	Leuc, 10 ⁹ /l	Gluc, mmol/l	CRP, mg/l
Before treatment	4.01	125.3	7.56	5.00	26.23	4.35	136.4	6.10	4.73	6.52
After treatment	4.46	139.2	7.60	5.20	5.81	4.42	138.2	6.10	5.32	3.51
LSD ₀₅	0.20	7.02	1.66	0.39	13.48	0.16	7.05	2.38	0.57	6.31

Erc – erythrocyte; Hb – haemoglobin; Leuc – leukocytes; Gluc – glucose; CRP – C-reactive protein.

* Medical Encyclopedia: RBC count. Medline Plus. Retrieved 18 November 2007.

CRP lowered to the normal level (below 5.8 mg/l) in 15 out of 18 patients in the course of treatment with Hepatil, Livosan and beebread-honey mixture (1 : 2). CRP was elevated over the normal level in two of the patients with a very high level before the treatment (135.02 mg/l and 412.42 mg/l), and after treatment it decreased to 35.0 mg/l and 22.10 mg/l. A normal CRP concentration in healthy human serum is usually below 10 mg/l. Higher levels are found in mild inflammations and viral infections (10–40 mg/l), active inflammation, bacterial infection (40–200 mg/l), in severe bacterial

infections and burns (> 200 mg/l). CRP is one of the best indicators showing inflammation and pathology [24]. CRP increases within four to six hours after the beginning of inflammation or tissue injury, doubling every eight hours. CRP declines rapidly with the resolution of tissue injury [25].

A statistically significant reduction in bilirubin, ALT, AST was recorded after treatment in the same group of patients (Table 2). A trend towards the reduction of bilirubin ALT and AST levels was achieved in the control group of patients.

Table 2. Dynamics of enzymes and bilirubin in two groups of patients treated for hepatitis

Tests	Patients treated with pharmaceuticals and beebread mixed with honey (N = 18)			Patients treated with pharmaceuticals (N = 5)		
	Bili, μmol/l	ALT, U/l	AST, U/l	Bili, μmol	ALT, U/l	AST, U/l
Before treatment	38.94	230.0	161.06	21.26	110.26	76.28
After treatment	11.83	19.21	18.71	15.88	46.64	33.24
LSD ₀₅	13.80	283.58	113.05	7.55	78.28	61.80

Bili – bilirubin; ALA – alanine aminotransferase; AST – aspartate aminotransferase.

Honey, pollen, and beebread are defined as biologically active bee products beneficial for the prevention of many diseases. Our previous study has shown that beebread helps to regulate the lipid metabolism and exerts a positive effect on the immune system of patients suffering from chronic arthritis and cardiovascular diseases and type 2 diabetes [26]. Monofloral clover honey 10% water solution, used for hepatitis A treatment, improved the hepatic function. The elevated values of alanine transferase (ALT) were lowered more than 10 times in the course of treatment [27]. Treatment of patients with chronic hepatitis and chronic cholecystitis with pollen positively influenced their health: reduced pain in the liver area, liver enlargement, improved the indications of blood [28, 29].

Conclusions

1. The use of medicament Hepatil and plant drug Livosan in combination with a beebread–honey

mixture had a positive effect on the decline of CRP whose elevated values indicated liver inflammation; AST, ALT and bilirubin reached normal levels after treatment.

2. Patients tolerated the beebread–honey mixture very well and did not feel any negative symptoms in the course of treatment.
3. Beebread used together with medicaments and Livosan supplement exerted a hepatoprotective effect and improved liver function.

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BIČIŲ DUONELĖS–MEDAUS MIŠINIO
PANAUDOJIMAS NUO ALKOHOLIO
PRIKLAUSOMŲ PACIENTŲ KEPENŲ LIGOMS
GYDYTI

S a n t r a u k a

Darbo tikslas – nustatyti bičių duonelės sumaišytos su medumi įtaką nuo alkoholio priklausomų ir sergančių chronišku hepatitu pacientų kepenų funkcijai ir kraujo rodikliams.

Respublikinėje Kauno ligoninėje buvo gydoma 18 pacientų, tarp kurių buvo 5 moterys ir 13 vyrų 16–69 metų amžiaus, sergantys chronišku hepatitu. Kai kurie iš šių pacientų, jų buvo 15, į ligoninę pateko dėl paūmėjusio hepatito, kurio pagrindinė priežastis nesaikingas alkoholio naudojimas; vienam ligoniui hepatitas buvo nustatytas dėl jo nutukimo ir dar vienam dėl

vaistų poveikio. Visiems ligoniams buvo atlikti kraujo tyrimai. Jų kraujyje nustatyti šie rodikliai: eritrocitai, hemoglobinas, leukocitai, C-reaktyvus baltymas (CRB), gliukozė ir bilirubinas, kepenų fermentai asparagininė aminotransferazė (AST) ir alanininė transaminazė (ALT). Ligoniai buvo gydomi vaistu Hepatil, bičių duonele, sumaišyta su medumi (1 : 2), po 15 g du kartus dienoje; taip pat maisto papildu Livosan, kuriame yra 83,33 mg tikrojo margainio (*Silybum marianum*) ekstrakto. Pastarasis vaistas yra gaminamas Lietuvoje UAB „Aconitum“. Po gydymo tiriamos ligonių grupės kraujo duomenys buvo lyginami su kontrolinės grupės, kurioje buvo 4 moterys ir 6 vyrai, duomenimis. Kontrolinės grupės ligoniai buvo gydomi tik vaistu Hepatil; šie pacientai nenaudojo bičių duonelės-medaus mišinio ir maisto papildu Livosan. Gydymas vidutiniškai truko 5 savaites.

Po gydymo kurso statistiškai patikimai sumažėjo CRB, AST, bilirubino ir gauta AST mažėjimo tendencija ligoniams, gydomiems vaistu Hepatil bičių duonelės-medaus mišiniu ir maisto papildu Livosan. Bičių duonelė vartojama su vaistais, maisto papildu Livosan atlieka kepenų apsaugos funkciją ir pagerina jų darbą.