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ARE ALBUMIN AND BILIRUBIN VALUES OF SMOKERS AFFECTED BY ROYAL JELLY SUPPLEMENT?

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ABSTRACT

The aim of this study was to determine the effect of royal jelly on albumin and bilirubin levels in 1000 mg / day dose- smoking addicts with controlled experimental design. For this purpose, Fagerström Nicotine Dependence Scale was applied to smokers, a total of 20 adult male cigarette addicts (n = 10) with high addiction scores (6-7 points) were included in the study and the cigarette addict experimental group (n = 10) taking royal jelly supplementation. Criteria such as smoking and dependence of the individuals included in the study, not having any disease and not having allergies to honey derived foods were determined and groups were formed in this way. The experimental group was given liquid royal jelly (n = 10/1000 mg /day) supplemented in glass vials in the refrigerator at the same time every morning for three weeks. No application was made to the control group. In order to determine albumin and bilirubin levels in both groups, blood samples were analyzed one day before and one day after the study. SPSS 22.0 package program was used for statistical analysis of measured data of experimental and control groups. For the analysis of the measured data of the experimental and control groups, 2x2 mixed factor ANOVA and LSD tests were performed. Statistical results were evaluated at p <0,05 significance level. In the analysis of the levels of albumin and bilirubin between the pre-test and post-test of the experimental group receiving royal jelly supplementation and the non-supplemented control group, no statistical significance was found (p> 0,05). In the intergroup analysis of the two groups, again no significant difference was found (p> 0,05). As a result of this study, it can be said that royal jelly supplementation at a dose of 1000 mg / day for 21 days does not affect albumin and bilirubin levels in cigarette addicts.

Keywords: Nicotine, royal jelly, supplement

1. INTRODUCTION

Although smoking is known to be one of the main environmental factors that cause lung function deterioration; respiratory tract infections, genetic disorders and eating habits can also be considered among environmental factors (Romieu, 2005). It is emphasized that the increased risk of cardiovascular diseases, cancer and respiratory diseases due to smoking may be related to differences in lifestyle behaviours and eating habits in smokers (Yılmaz and Aykut, 2012). Nutritional habits of smoking individuals compared to other individuals; some vitamin and mineral levels may change because it is different. Looking at the studies; The intake of vitamin C, folic acid, pulp, vitamin A, polyunsaturated fatty acids, iron, carotene and vitamin E was found to be lower and saturated fatty acid intake was higher in smokers than non-smokers (Jitnarin, Kosulwat, Boonpradern, Haddock & Poston, 2008; Yılmaz & Aykut, 2012). When the consumption of food is examined, individuals who smoke are consuming more white bread, tea sugar, red meat, butter, whole milk, eggs than non-smokers; they consume less whole wheat bread, high pulp breakfast cereals, vegetables and fruits (Yılmaz & Aykut, 2012). When the studies are examined; it is emphasized that correct nutritional supplements and physical activities increase the quality of life of individuals and have physical and physiological effects (Çınar, Akbulut, Kılıç, Özdal & Sarıkaya, 2018; Pancar, Özdal & Vural, 2018; Tahhan, Özdal, Vural, & Pancar, 2018; Tahhan, Özdal, Vural, & Mayda, 2018; Vural, Özdal & Öztütüncü, 2017). In the royal jelly produced in the hypopharyngeal and mandibular glands of worker bees for feeding the queen bees, water, protein,

sugar, fatty acids, free amino acids, minerals iron and calcium and vitamins are a food rich in thiamine, niacin, riboflavin (Okamoto, Taniguchi, Kunikata et al., 2003; Taniguchi, Kohno, Inoue et al., 2003). It is reported that royal jelly, which is widely consumed by humans, contains very low amounts of biologically active substances such as ptrein, neopterin, biopterin, xanthopterin and hormones due to the thought that it provides vigor, vitality and contributes to cell renewal (Akyol, 2013; Rembold and Dietz, 1965). In many studies on royal jelly, it suppresses humoral immunity in rats, stimulates proliferation and antibody production of immune competent cells in mice (Sver, 1996), increases hemopoietic origin cell production (Okamoto et al. 2003), and decreases cholesterol level. effects (Taniguchi et al., 2003). In addition to these, in human studies; it has been emphasized that it has cell repairing and rejuvenating effects along with its therapeutic role in skin and hair diseases, regulatory effects of sexual functions (Akyol, 2013; Yatsunami and Echigo, 1985). In this study; It was wondered that royal jelly, which is a rich and natural food source, will affect the albumin and bilirubin levels of cigarette addicts.

2. INDIVIDUALS AND METHOD

2.1. Subjects

The study protocol was explained to all participants prior to the study and voluntary participation certificate was obtained from the participants. A total of 20 healthy sedentary smokers aged 20-25 years participated voluntarily.

2.2. Experimental Design

This is an experimental design study. A total of 20 men were randomly divided into two groups. For this purpose, the Fagerström Nicotine Addiction Scale was administered to smokers and those with advanced addiction scores (6-7 points) were identified. A total of 20 adult males; smoking addict control group (n = 10) and royal jelly supplement (n = 10) were included in the study. Criteria such as smoking and dependence of the individuals included in the study, not having any disease, and no allergies to honey-derived foods were determined. The supplementation group was given liquid royal jelly (n = 10/1000 mg / day), which was kept refrigerated in glass vials at the same time every morning for three weeks. The control group was not given any reinforcement.

2.3. Blood Test Procedure

5 ml of venous blood samples were collected from the right arm in yellow cap tubes between 09:00-10:30 in the morning in Gaziantep University biochemistry laboratory before and after 1 day of royal jelly supplementation. Blood samples were centrifuged in Nüve-NF800 apparatus at 4000 rpm for a total of 7 minutes and their sera were separated. The Spectrophotometric method was used to determine serum levels in both groups; albumin and bilirubin levels were analyzed.

2.4. Statistical Analysis

SPSS 22.0 package program was used for statistical analysis of the measured data of the experimental and control groups. Data were presented as mean and standard deviation. Statistical results were evaluated at $p < 0.05$ significance level. For the analysis of the measured data of the experimental and placebo groups 2x2 mixed factor ANOVA and LSD tests were performed.

3. RESULTS

The data of the researches are presented in the table as mean and standard deviation.

Table 1. Analysis of Albumin and Biluribin Values of Supplement and Control groups

		Supplement groups (n=10)		Control groups (n=10)	
		Mean	SD	Mean	SD
Albumin	Pre test	52.75	2.31	51.37	3.49
	Post test	49.83	4.11	50.49	1.68
	Difference	-2.92	5.11	-0.89	4.75
Bilirubin	Pre test	0.81	0.19	0.79	0.48
	Post test	0.90	0.42	0.74	0.24
	Difference	0.09	0.54	-0.05	0.27

* SD standard deviation

Albumin pre-test values of the experimental group receiving royal jelly supplementation were found to be 52.75 ± 49.83 and post-test values were 49.83 ± 4.11 ; Bilirubine levels were 0.81 ± 0.19 and post-test 0.90 ± 0.42 . Albumin pre-test and post-test values of the control group were found to be 51.37 ± 3.49 and 50.49 ± 1.68 , respectively. Bilirubin levels were 0.79 ± 0.48 and 0.74 ± 0.24 , respectively. There was no statistically significant difference between the groups ($p > 0.05$).

4. CONCLUSION

Serum albumin and Bilirubin levels of royal jelly supplement given to cigarette addicts were investigated. There were changes in albumin and bilirubin levels in the reinforcement and control groups, but these changes were not statistically significant. The content of royal jelly varies according to natural feeding of bees, season and age of larvae and production method. The water-soluble pH of 3-5 royal jelly contains proteins, lipids and carbohydrates. Vigor, vitality, because of the thought that contributes to cell renewal; royal jelly, which is widely consumed by humans, has been reported to contain very low amounts of biologically active substances such as pterin, neopterin, biopterin, xanthopterin and hormones (Rembold and Dietz, 1965). Bilirubin has been said to be a residual product of blood catabolism after long studies. However, as a result of recent studies, it has been suggested that bilirubin is not only a waste product but rather a powerful antioxidant formed in the body by physiological pathways and plays a protective role in atherosclerosis, coronary artery disease and inflammation due to this effect (Siow, Sato & Mann, 1999; Stocker, Yamamoto, McDonagh, Glazer & Ames 1987).

It was reported that bilirubin levels increased in patients with heart failure, who underwent reperfusion treatment of oxidative metabolites, had an acute myocardial infarction (Shimomura et al. 2002). It was also emphasized that bilirubin inhibits LDL peroxidation which is one of the most important stages of atherosclerotic plaque formation and may reduce the risk of atherosclerosis (Wu, Fung & Yang, 1994). Recent studies have reported that bilirubin inhibits lymphocyte transport under VCAM-1-dependent intima, an important step in inflammation, as well as its antioxidant properties (Keshavan et al. 2005). In our study, an increase in bilirubin levels was observed in the supplementation group but it was not statistically significant. Albumin is the most common protein found in the blood plasma of human and other mammals. While carrying fatty acids and various substances in the blood, the most important function is to provide oncotic pressure. Albumin is also reported to be associated with the immune system (Pohonka, 2018). In our study, albumin values were slightly altered in the supplement and control groups. Royal jelly supplementation did not produce a statistically significant change in albumin and bilirubin levels. Royal jelly is mostly used in the treatment of diseases such as bronchial asthma, arteriosclerosis, stomach and intestinal diseases, rheumatism. In addition, it has been stated that it has high blood pressure prevention and kidney and urinary tract disorders. Royal jelly as well as mental and physical fatigue, as well as the aging ageing of the skin and against the deterioration of the skin is used effectively against stress (Anonymous, 1992). It is stated that royal jelly lowers blood cholesterol, total lipid, phospholipid, triglyceride, b-lipoprotein levels, has a blood pressure-lowering and vasodilatory activity, and has insulin-like peptides, hypoglycemic (lowering blood sugar) and immunological effects. In addition to these therapeutic roles in skin and hair diseases, sexual functions, as well as regulatory effects, cell repair and rejuvenating effects have been emphasized (Meydanoğlu, 1985; Yatsunami and Echigo, 1985). As a result, we can say that royal jelly supplementation given to cigarette addicts does not affect albumin and bilirubin levels.

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