THE IMPACT OF THE RESVERATROL ON THE BODY MASS INDEX IN PATIENTS WITH STROKE

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Abstract

Considered a powerful antioxidant, resveratrol has many health beneficial properties. Recent data provided by preclinical studies open a new perspective on the use of resveratrol, indicating the beneficial effects of this substance in the prevention and treatment of metabolic problems. The main objective of this study is to evaluate the effects of resveratrol on weight status in patients with stroke. The study was conducted over a period of 12 months, on a number of 164 patients divided into two study groups. The results showed a decrease in the body mass index in patients with resveratrol, even if weight status did not change significantly.

Key words: resveratrol, BMI, weight status, evaluation

INTRODUCTION

Resveratrol molecule is known among chemists, nutritionists and biologists as a highly effective antioxidant in ensuring and maintaining health.

Resveratrol is a natural compound from the group of polyphenols, a phytoestrogen found in about 72 plant species, from 12 families, among which: Vitaceae, Myrtaceae, Dipterocarpaceae, Cyperaceae, Gnetaceae, Fabaceae, Pinaceae, Polygonaceae, Moraceae, Fagaceae, Liliaceae. (APG II, 2003) This molecule is found in the shell of red and black grapes, in red wine, is considered the most valuable component of the wine, but we also find resveratrol in peanuts, groundnuts, Itadori tee. (Burns et al.,2002; Pervaiz, 2003). Besides the natural sources, resveratrol is now available as supplements.

In the recent years, resveratrol has been extensively studied, and the interest in this compound has greatly increased due to its antioxidant, cardioprotective, anti-inflammatory and anti-tumor properties. (de la Lastra and Villegas, 2007; Hung et al., 2000; Das et al.,2005, Atten et al., 2001; El-Mowafy and Alkhalaf, 2003)

Recent data provided by preclinical studies open a new perspective on the use of resveratrol, indicating the beneficial effects of this substance in the prevention and treatment of serious metabolic problems such as obesity and diabetes (Szkudelska K. and Szkudelski T., 2010; Baur JA et all, 2006; Barger JL, et al, 2008)

The main objective of this study is to evaluate the effects of resveratrol on weight status in patients with stroke.

MATERIAL AND METHOD

The comparative study was conducted on two groups of patients, one who received complementary treatment with antioxidants, in our case resveratrol, associated with allopathic medical treatment and physiotherapy procedures, hereinafter referred to as lot study, and the second one that performed only allopathic treatment associated with physiotherapy, hereinafter referred to as control group. The study group included 78 patients and the control group 86 patients.

To each patient in the study group was given a daily amount of 100 mg resveratrol as a single dose, usually until 12 a.m.

For each patient it was determined the Body Mass Index (BMI) at study entry and it was pursued the evolution of the weight status at 6 and 12 months after the beginning of the treatment.

The criteria for inclusion in the study were:

- men and women who have suffered an ischemic stroke;
- duration since stroke to the beginning of therapy less than or equal to 12 months;
- men and women aged over 18 who were able to express consent knowingly or whose companions gave their consent;
- patients which until now have not been treated with resveratrol supplements type;

The criteria for exclusion from the study were:

- patients who have a history of stroke;
- patients who have benefited from previous recovery program;
- patients who experienced recurrence of stroke during the study;
- patients who have not been able to attend all the 3 evaluations.

Statistical analysis was done by using the EPIINFO application, version 6 0, Program of the Center for Disease Control and Prevention - CDC (Center of Disease Control and Prevention) from Atlanta, adapted to the processing from medical statistics.

RESULTS AND DISSCUSIONS

At the initial assessment there was a prevalence of obesity of 38.46% in the group with resveratrol and 40.70% in the control group. After 6 months, the prevalence of obesity was 34.62% and 39.53% respectively, reaching at 12 months at 32.05% and 38.37% respectively. There has not been recorded a significant reduction in the prevalence of obesity in any of the groups ($p=0.170$, $p=0.631$ respectively) (table 1, figure 1).

Table 1

The evolution of weight status and body mass index

	Study lot		**Control lot**	
	No.	**%**	**No.**	**%**
Initially				
Normal weight	16	20,51	16	18,60
Overweight	32	41,03	35	40,70
First degree obesity	17	21,79	20	23,26
Second degree obesity	9	11,54	11	12,79
Third degree obesity	4	5,13	4	4,65
Average BMI	**29,41±4,20**		**29,64±4,44**	
At 6 months				
Normal weight	20	25,64	18	20,93
Overweight	31	39,74	34	39,53
First degree obesity	16	20,51	20	23,26
Second degree obesity	8	10,26	10	11,63
Third degree obesity	3	3,85	4	4,65
Average BMI	**27,51±4,33**		**29,41±4,87**	
At 12 months				
Normal weight	23	29,49	19	22,09
Overweight	31	39,74	34	39,53
First degree obesity	15	19,23	20	23,26
Second degree obesity	7	8,97	9	10,47
Third degree obesity	3	3,85	4	4,65
Average BMI	**25,86±4,15**		**29,23±4,52**	

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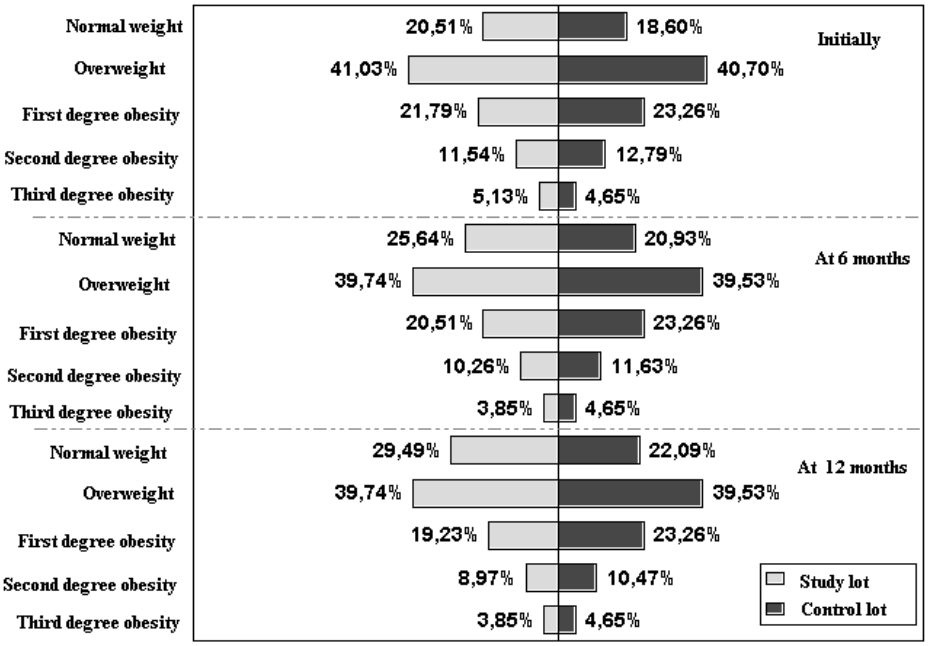

Fig. 1 Evolution of weight status

BMI values were changed during the 12 months, even though most patients kept their weight status.

The average BMI values have decreased after 6 months in the group receiving resveratrol from 29.41 kg/m^2 to 27.51 kg/m^2, resulting in an effect size ES=0.45, while in the group without resveratrol BMI values registered a minimum decrease (from 29.64 kg/m^2 to 29.41 kg/m^2), the effect size being of ES=0.05.

In the next 6 months, in the group receiving resveratrol we have noticed a decrease in BMI values 27.51 kg/m^2 to 25.86 kg/m^2 , resulting in an effect size ES=0.38, while in the group without resveratrol the effect size was ES=0.04 (from 29.41 kg / m^2 to 29.23 kg / m^2).

From baseline at 12 months in the group receiving resveratrol the effect size was ES=0.85, while in the group without resveratrol the effect size was ES=0.09.

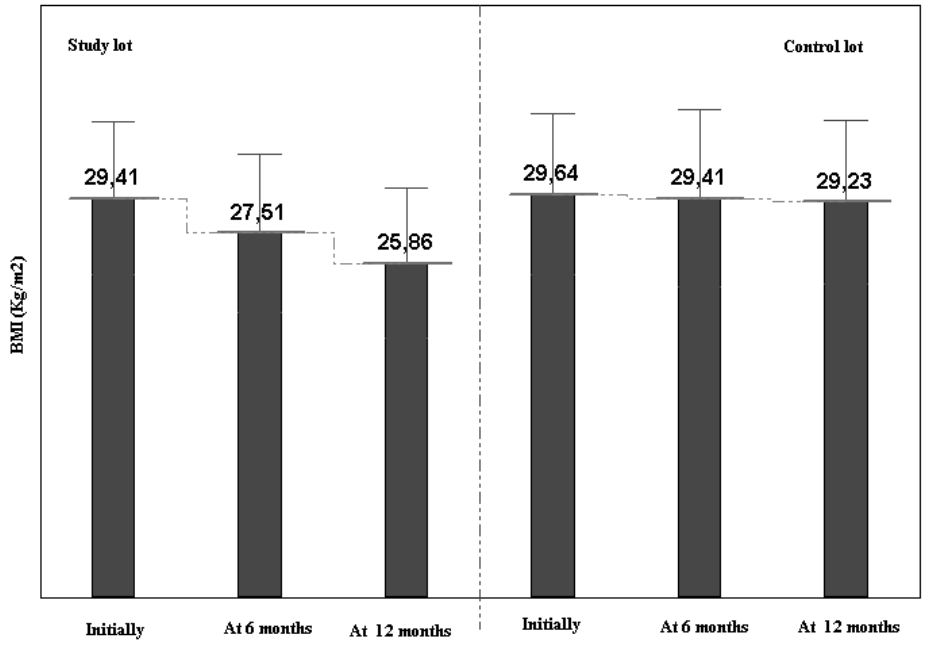

Fig. 2 Evolution of the mean values of BMI

Animal studies suggest that resveratrol mimics the metabolic effects of calorie restriction.

In this study we wanted to assess the impact of resveratrol, administered as complementary medication in patients with stroke, on the body mass index. The results indicate a decrease in BMI for patients in the group with resveratrol, fact that is in accordance with other studies.

CONCLUSIONS

Resveratrol is a molecule with highly beneficial in many physiological disorders.

In this study, we found that BMI values have decreased in patients receiving resveratrol during the period of 12 months, even though most patients kept their weight status.

These results suggest the possibility of using resveratrol in preventing and treating obesity.

REFERENCES

1. Angiosperm Phylogeny Group (APG II).. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG II. Botanical Journal of the Linnean Society 141: 399-436 ,2003
2. Burns, J., Yakota, T., Ashihara, H., Lean, M.E.J., Crozier, A., 2002. Plant foods and herbal sources of resveratrol. J. Agric. Food Chem. 50, 3337–3340.
3. Pervaiz, S., 2003. Resveratrol: from grapevines to mammalian biology. FASEB J. 17,1975–1985.
4. de la Lastra, C.A., Villegas, I., 2007. Resveratrol as an antioxidant and pro-oxidant agent: mechanisms and clinical implications. Biochem. Soc. Trans. 35, 1156–1160.
5. Hung, L.M., Chen, J.K., Huang, S.S., Lee, R.S., Su, M.J., 2000. Cardioprotective effect of resveratrol, a natural antioxidant derived from grapes. Cardiovasc. Res. 47, 549–555.
6. Das, S., Alagappan, V.K., Bagchi, D., Sharma, H.S., Maulik, N., Das, D.K., 2005 Coordinated induction of inos-vegf-kdr-enos after resveratrol consumption: a potential mechanism for resveratrol preconditioning of the heart. vasc. pharmacol. 42, 281–289.
7. El-Mowafy, A.M., Alkhalaf, M., 2003. Resveratrol activates adenylyl-cyclase in human breast cancer cells: a novel, estrogen receptor-independent cytostatic mechanism. Carcinogenesis 24, 869–873
8. Atten, M.J., Attar, B.M., Milson, T., Holian, O., 2001. Resveratrol-induced inactivation of human gastric adenocarcinoma cells through a protein kinase C-mediated mechanism. Biochem. Pharmacol. 62, 1423–1432.
9. Szkudelska K. and Szkudelski T., Resveratrol, obesity and diabetes, European Journal of Pharmacology 635 (2010) 1–82010
10. Baur, J.A., Pearson, K.J., Price, N.L., Jamieson, N.L., Lerin, C., Kalra, A., Prabhu, V.V., Allard, J.S.,Lopez-Lluch, G., Lewis, K., Pistell, P.J., Poosala, S., Becker, K.G., Boss, O., Gwinn, D., Wang,M., Ramaswamy, S., Fishbein, K.W., Spencer, R.G., Lakatta, E.G., Le Couteur, D., Shaw, R.J.,Navas, P., Puigserver, P., Ingram, D.K., de Cabo, R., Sinclair, D.A., 2006. Resveratrol improves health and survival of mice on high-calorie diet. Nature 444, 337–342.
11. Barger JL Kayo T, Vann JM, et al. A low dose of dietary resveratrol partially mimics caloric restriction and retards aging parameters in mice. PLoS One 2008;3:e2264