

Coriander (*Coriandrum Sativum*) and Chia (*Salvia Hispanica*) Intake Effect in Volunteers



Biochemistry

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ABSTRACT

*As a result of changes in alimentation habits in Mexico for the last 20 years the country occupies now the first place in the world in child obesity, and the prevalence of metabolic syndrome is 26.6%. The following protocol was realized as a part of an effort to make the population conscious of the problem. We worked for 6 months with a group of 120 volunteers. For the first two months they conducted their normal lives, their levels of glucose, cholesterol triglycerides, and magnesium and antioxidant capacity were monitored. For the following two months the volunteers were divided in 3 groups: the 1st group was administered *Coriandrum sativum* seed powder, the 2nd *Salvia hispanica* powder and the 3rd group both *Coriandrum sativum* and *Salvia hispanica* powder. For the last 2 months, without the interruption of seed treatment, they also started to make 20 minutes of physical exercise daily, depending on individual physical conditions. During the first two months of treatment, the levels of glucose and cholesterol for the first group diminished, for the second group cholesterol levels diminished, and triglycerides levels. For the 3rd group, glucose level diminished, cholesterol and triglycerides. For the last 2 months, when the exercise started, the levels were maintained. In the prehispanic culture, these seeds were employed traditionally for different medical purposes, it seems, that now it is time to return not only to traditional Mexican food, but to the traditional Mexican medicine as well.*

Introduction. Metabolic syndrome phenotype is an atherogenic cardiovascular risk factor, defined by the co-occurrence at least of two of the following features: hyperglycemia, hypertension, dyslipidemia and obesity. The Mexican population occupies the first place in the child obesity, and one can expect that 80% of these obese children will develop a metabolic syndrome when they become adolescent. In this work we use *Coriandrum sativum* (coriander) seed, which contains Mg²⁺, quercetin, luteolin and other phenolic compounds and *Salvia hispanica* (chia) seeds, rich in Mg²⁺, omega-3, fatty acids, fiber, quercetin, kaempferol and chlorogenic acid [1, 2]. The traditional Mexican medicine uses coriander as heavy metals quelant and hypoglycemic agent, and chia as hypoglycemic and hypolipemic agent. Their

Therapeutic action is related to the polyphenols they contain. The chia has omega 3 as well. In Mexican diet, the omega 3 consumed is not sufficient, and the ratio of omega 3 to omega 6 is not in equilibrium.

We have also analysed magnesium levels, because the Magnesium is the second most abundant intracellular ion. Low serum magnesium levels have been associated with high blood pressure (HBP) and atherogenic alterations. In addition serum magnesium levels are associated with the development of type 2 DM [3]. We have determined magnesium levels, omega 3/6 balance and polyphenols in patients with the metabolic syndrome.

Material and Methods In this study we examined the glucose, cholesterol and triglycerides serum levels in volunteers with metabolic syndrome. Additionally, magnesium serum levels and antioxidant capacity

Were determined. All measurements were made with enzymatic methods. We worked with a group of 120 volunteers. For the first two months they conducted their normal lives, their levels of glucose, cholesterol and triglycerides were monitored. For the following two months the volunteers were divided in 3 groups:

The 1st group was administered *Coriandrum sativum* seed powder, the 2nd *Salvia hispanica* powder, and the 3rd group both *Coriandrum sativum* and *Salvia hispanica* powder, and the same parameters were evaluated.

Results and Discussion. During the first two months of treatment, the levels of glucose and cholesterol for the first group diminished, for the second group glucose levels diminished 4.73%, cholesterol levels diminished 24.24% and triglycerides levels 9%. For the 3rd group, glucose level diminished 2.4%, cholesterol 27% and triglycerides 2%.

In the first group (*Coriandrum sativa*), the antioxidant capacity increased, as well as magnesium and triglyceride serum levels (Figure). In second group (*Salvia hispanica*) glucose, cholesterol and triglycerides serum levels decreased and HDL and antioxidant capacity increased (Figure 1), and in the 3rd group (both *Salvia hispanica* and *Coriandrum sativa*), antioxidant capacity, Mg²⁺ and HDL levels increased and lipids levels were within a normal, (Figure). Additionally, the volunteers lost 2 to 3 kg/month. In conclusion, the addition to the diet of *Coriandrum sativum* and *Salvia hispanica* seeds helps to control hyperglycemia, hypertension, dyslipidemia and obesity, i.e. all metabolic syndrome components. Additionally, increase in Mg²⁺ levels and in antioxidant capacity was observed. The optimal combinations of *Coriandrum sativum* (quercetin, luteolin, Mg²⁺) and *Salvia hispanica* (quercetin, kaempferol, chlorogenic acid, fiber and omega-3), may offer benefits in reducing cardiovascular risk and improving insulin resistance, and consequently diminish the risk of DM 2 development.

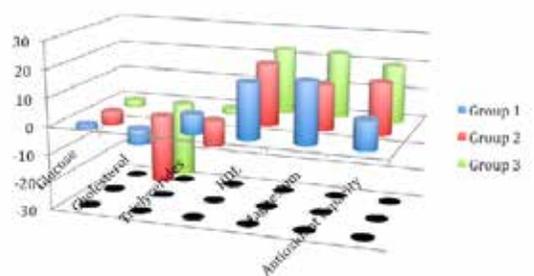


Figure 1. In this graphic show the levels of glucose, cholesterol, triglycerides, HDL, Mg²⁺ and antioxidant capacity during the first two months of treatment, the levels of glucose and cholesterol for the first group (blue) diminished, for the second group (red) glucose levels diminished 4.73%, cholesterol levels diminished 24.24% and triglycerides levels 9%. For the 3rd group (green), glucose level diminished 2.4%, cholesterol 27% and triglycerides 2%.

References

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