

**Effect of adding chocolate with high cocoa content to the usual diet of postmenopausal women on blood pressure and arterial stiffness markers. Randomized clinical trial**

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**BACKGROUND**

The intake of polyphenols has shown certain effects on cardiovascular health, especially in populations with an increased cardiovascular risk.

**PURPOSE**

This work evaluates the effect of adding 10g. of chocolate with 99% cocoa content to the usual diet, on blood pressure and arterial stiffness markers in postmenopausal women.

**METHODS**

Randomized clinical trial with two parallel groups that included 61 women (26 control and 35 intervention) between 50-64 years in postmenopausal period contrasted by amenorrhea of 12 months. Personal history of cardiovascular disease and presence of high blood pressure, diabetes mellitus or dyslipidemia were exclusion criteria. Blood pressure was measured with an oscillometric device and the brachial-ankle pulse wave velocity (baPWV) and the cardio-ankle vascular index (CAVI). The intervention group received instructions for the daily intake of 10 g. of chocolate with 99% of cocoa added to your usual diet, for 3 months. The nutritional contribution of this product is 59 kcal and 65.4 mg of polyphenols per day. There was no intervention in the control group. All the variables were measured in the baseline assessment and at 3 months post-randomization. The recruitment began in June 2018.

**RESULTS**

The mean age was 58.3±3.6 years. The values of systolic blood pressure-SBP 109.0±13.9, baPWV 7.95±1.00 and CAVI 4.57±0.52 ( $p>0.05$  in all, with the exception of CAVI (Intervention 4.39±0.47, control 4.79±0.50,  $p=0.002$ ). No differences were found between groups in the evolution of any of the variables studied after adjustment for the baseline value (SBP  $p=0.290$ , baPWV  $p=0.782$ , CAVI  $p=0.502$ ). The control group decreased SBP -2.9 (-0.4 to 6.2),  $p>0.05$ , and baPWV -0.26 (-0.04 to -0.49),  $p<0.05$ . The intervention group decreased SBP -5.0 (-1.1 to -8.9),  $p=0.012$ , and the baPWV -0.22 (-0.04 to -0.40),  $p=0.016$ . Both groups slightly increase their CAVI values without reaching statistical significance.

CONCLUSIONS Add 10 g. of chocolate with a high proportion of cocoa to the usual diet of postmenopausal women for 3 months, does not provide additional benefits against non-supplementation, in the blood pressure figures, baPWV and CAVI. Although the reduction is stronger in the case of the experimental group for the SBP and the baPWV. More studies, with more women and more follow-up, are necessary to evaluate the effects of cocoa polyphenols on the cardiovascular health of postmenopausal women.