

This is the peer reviewed version of the following article:

Chocolate intake in pre-menopausal women / Mattioli, Anna Vittoria; Farinetti, Alberto. - In: *ATHEROSCLEROSIS*. - ISSN 0021-9150. - 269:(2018), pp. 312-312. [10.1016/j.atherosclerosis.2017.11.015]

*Terms of use:*

The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

18/12/2025 18:58

# Accepted Manuscript

Chocolate intake in pre-menopausal women

Anna Vittoria Mattioli, Alberto Farinetti

PII: S0021-9150(17)31385-0

DOI: [10.1016/j.atherosclerosis.2017.11.015](https://doi.org/10.1016/j.atherosclerosis.2017.11.015)

Reference: ATH 15269

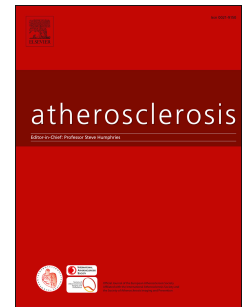
To appear in: *Atherosclerosis*

Received Date: 13 November 2017

Accepted Date: 16 November 2017

Please cite this article as: Mattioli AV, Farinetti A, Chocolate intake in pre-menopausal women, *Atherosclerosis* (2017), doi: 10.1016/j.atherosclerosis.2017.11.015.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



**Chocolate intake in pre-menopausal women**

Anna Vittoria Mattioli, Alberto Farinetti

Surgical, Medical and Dental Department of Morphological Sciences related to Transplant,  
Oncology and Regenerative Medicine, University of Modena and Reggio Emilia (Italy)

Keywords: chocolate, women, stroke.

*To the Editor,*

We have read with great interest the paper “Chocolate consumption and risk of stroke among men and women: A large population-based, prospective cohort study” by Dong and coworkers, published in *Atherosclerosis* [1], and we have found their conclusion of importance, with a view on clinical prevention.

With reference to the findings reported in the paper, we would like to make the following contribution to the discussion. In a recent analysis performed on 650 healthy women in pre-menopausal age (age range 45-54 years), we found that chocolate intake was higher in women in the low quartile of adherence to Mediterranean Diet (low Med Score). This subgroup of women showed a lower ABI index compared to women with higher Med Score. The analysis of sources of antioxidants showed a greater intake from fruit and vegetables in the higher quartiles of Med Score. Coffee and tea were similarly distributed among the quartiles of Med Score [2]. Analysis from diet recall had the major limitation of missing data regarding out-of-mealtime snacking and drinking.

We clearly understand that nutritional habits in Japan deeply differ from Mediterranean ones.

However, we would like to underline that in a Mediterranean lifestyle characterized by high intake of antioxidants. [3] In our population, chocolate represents only a small percentage, with a low impact on total antioxidant intake. In Mediterranean countries, wine is a strong antioxidant source and the synergistic effect of drinking wine during meals and the antioxidant bioavailability is well known [3].

Moreover, it is well known that chocolate bars contain a low level of caffeine. In a previous report on hypertensive patients, we found that those who reduced coffee intake had a higher chocolate bar consumption, which affected total caffeine intake [4]. Due to the controversial effect of caffeine on cardiovascular disease, it is possible that the amount of caffeine included in chocolate bar positively influenced the outcome [4,5,6].

### **Conflict of interest**

The authors declared they do not have anything to disclose regarding conflict of interest with respect to this manuscript.

### **References**

1. Dong JY, Iso H, Yamagishi K, Sawada N, Tsugane S; Japan Public Health Center–based Prospective Study Group. Chocolate consumption and risk of stroke among men and women: A large population-based, prospective cohort study. *Atherosclerosis*. 2017 May;260:8-12. doi: 10.1016/j.atherosclerosis.2017.03.004. Epub 2017 Mar 4.
2. Mattioli AV, Coppi F, Migaldi M, Scicchitano P, Ciccone MM, Farinetti A. Relationship between Mediterranean diet and asymptomatic peripheral arterial disease in a population of pre-menopausal women. *Nutr Metab Cardiovasc Dis*. 2017 Nov;27(11):985-990. doi: 10.1016/j.numecd.2017.09.011. Epub 2017 Oct 3.

3. Mattioli AV, Palmiero P, Manfrini O, Puddu PE, et al. Mediterranean diet impact on cardiovascular diseases: a narrative review. *J Cardiovasc Med (Hagerstown)*. 2017 Dec;18 (12): 925-935. doi: 10.2459/JCM.0000000000000573.
4. Mattioli AV, Farinetti A, Miloro C, Pedrazzi P, Mattioli G. Influence of coffee and caffeine consumption on atrial fibrillation in hypertensive patients. *Nutr Metab Cardiovasc Dis*. 2010 Feb 16. [Epub ahead of print] doi:10.1016/j.numecd.2009.11.003
5. Kokkou E, Siasos G, Georgiopoulos G, et al. The impact of dietary flavonoid supplementation on smoking-induced inflammatory process and fibrinolytic impairment. *Atherosclerosis*, 2016, 251: 266–272
6. Riksen NP, Rongen GA, Smits P. Acute and long-term cardiovascular effects of coffee: Implications for coronary heart disease. *Pharmacology & Therapeutics* 2009; 121: 185–191