

Press release

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Dark chocolate consumption buffers stress reactivity in humans

Dark chocolate consumption protects from cardiovascular diseases but underlying mechanisms are not fully understood. Research from the Universities of Bern and Zürich and the University Hospital Bern suggests that a single intake of half a bar of dark chocolate with high cocoa content substantially reduces bodily reactions to acute psychological stress two hours after consumption. Since mental stress is a known cardiovascular risk factor dark chocolate thus may add to the protection of the cardiovascular system from harmful stress effects.

Cardiovascular diseases are the leading cause of death in industrialized countries. Psychosocial stress is an important psychological risk factor for cardiovascular diseases. In particular, short episodes of strong emotional stress induce biological changes that, in turn, can trigger acute myocardial infarction. Consumption of dark chocolate substantially lowers cardiovascular mortality due to the contained cocoa flavonoids. Whereas beneficial effects of cocoa flavonoids on classical cardiovascular risk factors such as blood pressure or blood lipids are well documented, many open questions remain regarding underlying mechanisms. A group of researchers led by Petra H. Wirtz, PhD, from the Department of Psychology of the University of Bern in Switzerland investigated for the first time whether in humans the intake of dark chocolate would protect from physiological effects of acute mental stress. In a placebo-controlled study half of the healthy male participants had to consume either 50 g of dark chocolate with high cocoa content or an identically looking placebo chocolate without cocoa. The latter was an initially white chocolate that was flavored and dyed darkly in order to match the color and taste of dark chocolate. Two hours later, all participants had to perform a 10-minute mental stress test that included a mock job interview by two non-supportive persons wearing white coats. This stress test is known to activate the body to produce stress hormones. The researchers measured stress hormones that are released by the adrenal gland, an organ in the periphery of the body, as well as stress hormones that are primarily secreted in central parts of the body including the brain. All stress hormones were measured before and up to one hour after stress. In addition to a psychological measure of stress cocoa flavonoid levels were measured in the blood of the participants. Results showed that the group of participants that consumed dark chocolate showed a lower stress reactivity of the adrenal stress hormones cortisol and epinephrine. The higher the measured flavonoid levels in the blood the lower was the reaction of these stress hormones to the stress test. There were no differences between the dark chocolate group and the placebo group regarding stress hormones secreted more centrally as well as in the psychological stress measure. «We assume that dark chocolate protects from physiological reactivity to mental stress at the level of the adrenal gland by reducing stress

hormone secretion», says Dr. Wirtz. The researchers hope that their results will add to a better understanding of the protecting effects of cocoa flavonoids on the cardiovascular system and that they may provide new insights for prevention of cardiovascular disease in both, risk populations and healthy persons. Results of the study have been published ahead of print in the journal «*Journal of the American College of Cardiology (JACC)*».

Bibliographical information:

Petra H. Wirtz, Roland von Känel, Rebecca Meister, Angela Arpagaus, Sibylle Treichler, Ulrike Kuebler, Susanne Huber, Ulrike Ehler: Dark chocolate intake buffers stress reactivity in humans, Journal of the American College of Cardiology 2014, in press, doi: 10.1016/j.jacc.2014.02.580.

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