Anticipatory and consummatory effects of (hedonic) chocolate intake are associated with increased circulating levels of the orexigenic peptide ghrelin and endocannabinoids in obese adults.

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Background: Hedonic hunger refers to consumption of food just for pleasure and not to maintain energy homeostasis. Recently, consumption of food for pleasure was reported to be associated with increased circulating levels of both the orexigenic peptide ghrelin and the endocannabinoid 2-arachidonoyl-glycerol (2-AG) in normal-weight subjects. To date, the effects of hedonic hunger, and in particular of chocolate craving, on these mediators in obese subjects are still unknown.

Methods: To explore the role of some gastrointestinal orexigenic and anorexigenic peptides and endocannabinoids (and some related congeners) in chocolate consumption, we measured changes in circulating levels of ghrelin, glucagon-like peptide 1 (GLP-1), peptide YY (PYY), anandamide (AEA), 2-AG, palmitoylethanolamide (PEA), and oleoylethanolamide (OEA) in 10 satiated severely obese subjects after consumption of chocolate and, on a separate day, of a non-palatable isocaloric food with the same bromatologic composition. Evaluation of hunger and satiety was also performed by visual analogic scale.

Results: The anticipatory phase and the consumption of food for pleasure were associated with increased circulating levels of ghrelin, AEA, 2-AG, and OEA. In contrast, the levels of GLP-1, PYY, and PEA did not differ before and after the exposure/ingestion of either chocolate or non-palatable foods. Hunger and satiety were higher and lower, respectively, in the hedonic session than in the non-palatable one.

Conclusions: When motivation to eat is generated by exposure to, and consumption of, chocolate a peripheral activation of specific endogenous rewarding chemical signals, including ghrelin, AEA, and 2-AG, is observed in obese subjects. Although preliminary, these findings predict the effectiveness of ghrelin and endocannabinoid antagonists in the treatment of obesity.