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Pleasant and Aversive Taste Perception in Anorexia Nervosa: a Functional MRI Study

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INTRODUCTION. Taste perception is a complex phenomenon modulated by different factors, such as taste receptors and memory brain circuitry. The palatability of the food, that activates central reward pathways, also plays an important role in taste perception. It means that taste is able to influence the choice of food and then the eating behavior.

OBJECTIVES. It's well known that people with anorexia nervosa (AN) have lower sensitivity to reward stimuli and recent studies have shown that altered function of taste neural circuitry may contribute to restricted eating in AN.

AIMS. The aim of this study is to evaluate, in patients suffering from AN, the activation of the brain areas involved in taste perception and in central reward mechanisms to both pleasant and aversive taste stimuli and to correlate gustatory neural circuitry activity with eating behaviors, temperament measures and/or sensitivity to reward and to punishment.

METHODS. 12 underweight AN patients and 12 normal-weight healthy subjects underwent a functional MRI to measure brain areas activation to repeated stimuli of a pleasant taste, a sucrose solution, alternated with an aversive taste, a bitter solution, and a water taste.

RESULTS. Preliminary results showed, in patients with AN, a dysfunctional activation of brain areas involved in both taste perception and reward mechanisms following both the pleasant and aversive stimulus.

CONCLUSIONS. These results, if confirmed in future analyses, may improve our knowledge about the pathophysiological mechanism of AN.