Effects of appetite, BMI, food form and flavor on mastication: almonds as a test food.

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European Journal Of Clinical Nutrition
62:1231-1238.

Abstract:
Objectives: To investigate the effects of appetitive sensations, body mass index (BMI) and physical/sensory properties of food (almonds) on masticatory indices and resultant pre-swallowing particle sizes.
Subjects/Methods: Twelve lean (BMI¼22.270.3) and 12 obese (BMI¼34.370.6) adults. After collecting appetitive ratings, electromyographic recordings were used to assess participants' microstructure of eating for five almond products (raw, dry unsalted roasted, natural sliced, roasted salted and honey roasted) under fasted and satiated conditions. Duplicate samples were masticated to the point of deglutition and then were expectorated and size sorted.
Results: No statistically significant effects of BMI were detected for any of the mastication measures. Maximum and mean bite forces were greater under the fasted condition. Sliced almonds required lower bite force than did the other almond varieties. The pre-swallowing particle sizes were significantly greater for the sliced almonds than all other varieties. Both the number of chews and mastication time were negatively correlated with particle size. There were no significant effects of almond form or flavor on particle size.
Conclusions: These results do not support differences in masticatory performance between lean and obese individuals, nor effects of sensory properties. Instead, the physical form of foods as well as an individuals' appetitive state may have a greater influence on masticatory behavior. The health implications of these observations warrant further investigation.