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Influence of various foods on the expression and activity of salivary α-amylase

Harith A[1], Rashidi KN[1,] Halim AAA[2], Syed Abdul Rahman SN[2]

1. Faculty of Dentistry, Universiti Malaya, Kuala Lumpur, Malaysia.
2. Department of Oral and Craniofacial Sciences, Faculty of Dentistry, Universiti Malaya, Kuala Lumpur, Malaysia.

Objectives: The present review aims to summarize previous studies/ information regarding the influence of various types of food on the expression and activity of salivary α-amylase.

Methods: A literature search was conducted with the following databases: ScienceDirect, PubMed and Google Scholar. The inclusion criteria were (i) peer-reviewed academic journals published in English relevant to our study (including experimental study, systematic and narrative review, observational study) and (ii) the articles are accessible abstracts and full text. The exclusion criteria were (i) editorials, commentaries, discussion papers, conference abstracts, and duplicates and (ii) journals focusing solely on pancreatic amylase.

Results: A total of 36 papers were included in the review; 10 review papers, 23 experimental studies, and three observational studies. Key categories of identified impact on the relationship of various foods in protein expression modulation and salivary α-amylase activity due to carbohydrate hydrolysis. Various types of food may either enhance or reduce the expression and activity of salivary α-amylase. From the findings, salivary α-amylase shows a beneficial impact in the presence of starch and citric acid. Sodium, potassium and calcium act as enzyme stabilizers to protect the enzyme from heat denaturation. Nevertheless, gluten, resistant starch, magnesium, low pH beverages, phytic acid and phenolic compound showed otherwise. Chewing also has minimal effect on promoting salivary α-amylase activity and secretion.

Conclusion: Hence, the findings support the activity and expression of the salivary α-amylase may be affected by several factors, particularly the influence of various foods.

Key words: salivary α-amylase, AMY1, acidic foods, carbohydrate, calcium, starch, phenolic compound.