

Action of Various Wine Polyphenols on Starch Hydrolysis

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Introduction. Under COST (European Cooperation in Science and Technology) programme, Food & Agriculture 1005 an experimental set-up was made to determine the effects of “Maison Riviere” wines’ polyphenols on the starch digestion. The model of the digestive system included the key enzymatic components in macro metabolism of carbohydrates, which are a big portion of western dietary daily consumption, and their dysmetabolism leads to metabolic syndrome, noninsulin-dependent diabetes, pancreatic insufficiency etc. The enzymatic system under investigation was the Human Salivary Amylase.

Material and Methods. Two types of red wines under investigation:

- 1) L'Excellence Clos Des Menuts 2010 14.5% containing tannins from ripe grape and
- 2) Menuts 2011 Red Bordeaux 13.5% with compounds 85% polyphenols from Merlot grape and 15% polyphenols from Cabernet grape.

The methods used in order to establish the effects of each given wine on the function of the enzymatic activity incorporate the testing of quantitative and qualitative results of enzymatic functions (products). The products tested are glucose, maltose and dextrin. The activity of amylase was tested photospectrometrically and by amyloclastic force measurement. All testing was done by single-blind method.

Results. Both wines showed activating effect on amylase and hydrolysis of starch. The product concentration is increased by $3.1\% \pm 0.1\%$ in flactuates between 0.50 and 100 μl and $5.3\% \pm 0.1\%$ between 100 and 200 μl . It should be noted that spectral analysis of the wines in the given concentration was absent; any other addition showed minimal effect on the absorption at 400 nm wavelength. This absorption was taken into account in the calculation of absorption percentages.

Conclusions. The activity of polyphenols’ mixture on amylase does not depend on either the polyphenols’ class used or proanthocyanidins or tannins. In both types of wines, polyphenolic compound amylase was activated and the found miniscule dose required to activate amylase (0.012% to 0.05%) does not break any existing medical recommendation of alcohol daily consumption. Improved carbohydrate digestion will be of clinical benefit to patients suffering from glucosidase deficiency, pancreatic insufficiency, malabsorption etc.