LETTERS

Honey and its protective role against oxidation of human low density lipoproteins and total serum lipoproteins

Dear Editor,

Honey, a dietary source of natural antioxidants[1], could have a protective role against diseases, such as cancer and cardiovascular diseases[2,3]. The present study is an attempt, the first to our knowledge, to examine the effects of Greek pine tree honey on the in vitro oxidation of human serum lipoproteins and isolated plasma low density lipoproteins (LDL).

Serum and isolated LDL[4] were oxidized with $CuSO_4$ water solution in the presence of honey (100, 200 and 400μg/ml diluted serum and 10, 20 and 40μg/ml diluted LDL, respectively). The oxidation was monitored spectrophotometrically[4]. In both cases, the following indexes were calculated graphically: lag time (the intersection of the baseline with the tangent of the slope of the absorbance curve, in minutes), maximum absorbance (OD_{max}) and time needed to reach maximal absorbance [t(max)] (min), in relation to lag time of the control curve, which was an oxidation curve without the addition of honey.

Lag time was significantly increased ($p<0.05$) only after the addition of 400 μg honey/ml serum (72.44 ± 5.4 vs 19.10 ± 1.0 min of control) and of 20 and 40 μg honey/ml LDL (42.2 ± 2.2 and 79.6 ± 3.1 min, respectively, vs 30.1 ± 2.1 min without honey). OD_{max} values were 0.45±0.04min, 0.47±0.01min and 0.41±0.03min for serum and 1.1±0.06min, 1.1±0.03min and 0.87±0.04min for LDL, but not significantly increased in relation to control (0.42±0.01 and 0.90±0.02, respectively), t(max) increased in a dose dependent manner, but the slope of the curves remained unchanged. Therefore, honey addition does not affect the rhythm of the oxidation, but only the susceptibility of lipids to oxidation.

In conclusion, Greek honey exerts strong antioxidant activity on both human LDL, in accordance to previous studies with honeys of other origin[5], and on serum total lipoprotein oxidation *in vitro*. The exact quantity of honey which can be consumed daily for major antioxidant protection, needs to be estimated. Nevertheless, the present study shows that Greek honey can postpone LDL oxidation, and potentially benefit the consumers.

References

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