



# Book of Abstracts



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## IN VITRO AND IN VIVO EFFECT OF COFFEE COMPONENTS ON THE GLYCOXIDATIVE STRESS

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### Abstract

The study investigated how the bioactive coffee compounds affect the glycoxidative stress induced by diabetes. The *in vitro* antiglycative effect of chlorogenic acid (CGA) and coffees (green and roasted) was evaluated in model systems constituted by albumin and methylglyoxal or glyoxylic acid under simulated physiological conditions. *In vivo* study was undertaken by employing obese Zucker rats-*Lepr<sup>fa/fa</sup>* and their lean littermates (Zucker rats-*Lepr<sup>fa/-</sup>*) 4-7 weeks old. The rats were feed with a standard diet and treated by gavage with daily doses of CGA and coffees corresponding to 10 mg CGA/kg of body weight during four weeks mimicking the CGA intake by moderate consumption of coffee. The formation of advanced glycation end products (AGE), commonly employed as biomarkers of ageing and diabetic complications, was determined in model systems and in plasma samples by measuring the fluorescence ( $\lambda_{exc}=360$  nm and  $\lambda_{em}=460$  nm) and ELISA analysis employing anti-AGE antibody. The gain of body weight, liver weight, glucose; as well as, antioxidant capacity, protein content and protein profile of plasma samples were also determined. CGA and coffees inhibited AGE formation *in vitro*. Neither the antioxidant capacity nor glucose homeostasis of the obese diabetic rats was improved after treatment with CGA or coffees. Green coffee resulted in less weight gain and inhibited AGE formation *in vivo*. Roasted coffee decreased the gain of weight, reduced plasma antioxidant capacity and increased plasma AGE levels determined by ELISA. Our findings support that green coffee compounds, CGA and caffeine, might prevent obesity and diabetic complications due to glycoxidation.

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