

COULD NUCLEIC ACIDS OXIDATIVELY MODIFIED DURING THERMAL PROCESSING OF RED MEAT BECOME COMPONENTS WITH POTENTIALLY CARCINOGENIC PROPERTIES?

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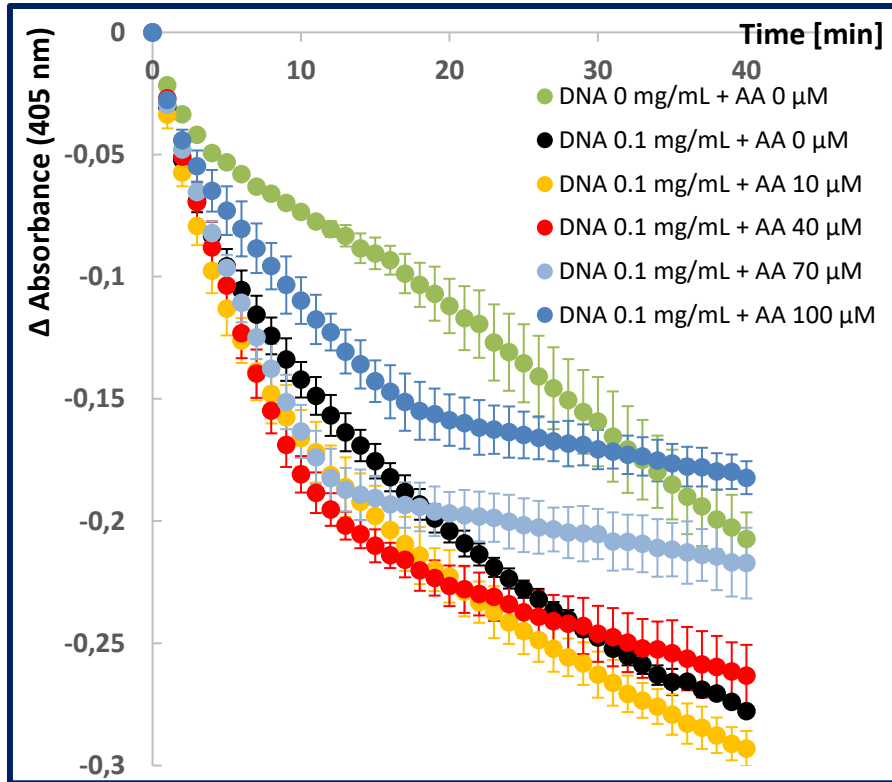


Fig. 1 Absorbance vs time at 405 nm wavelength in a system containing: 0.5 mg/mL phospholipids, 2.5 μ M bovine methaemoglobin, 0.1 mg/mL DNA isolated from herring sperm, and various concentrations of ascorbic acid. Abbreviation AA refers to ascorbic acid.

The presented study is the first step on the way to verify whether oxidative modification of nucleic acids arising in the presence of heme iron and phospholipids could be associated with the carcinogenic properties of thermally processed red meat. Additionally, whether ascorbic acid, used in the meat industry as an antioxidant, affects the kinetics of oxidation of nucleic acids.

The decrease in the concentration of bovine methaemoglobin (absorbance at 405 nm) is an indirect indicator of the accelerated kinetics of oxidation of phospholipids and other components prone to oxidation (DNA and ascorbic acid).

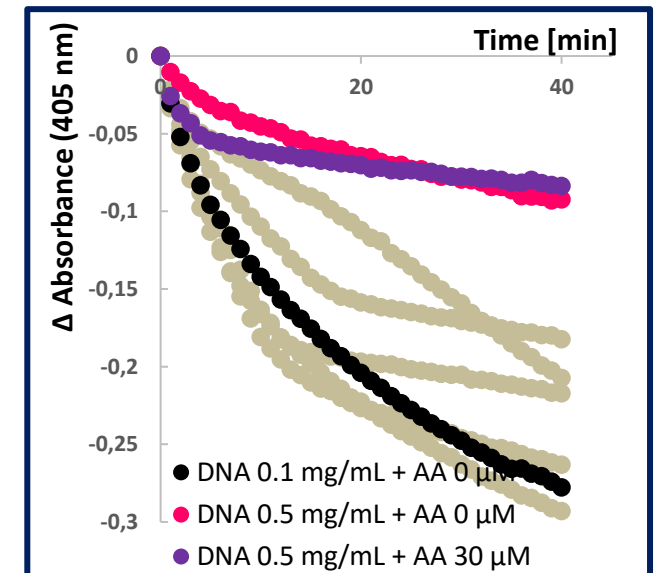


Fig. 2 Absorbance (405 nm) vs time for systems containing higher concentration of DNA (0.5 mg/mL) in comparison to systems with 0.1 mg/mL of DNA. Abbreviation AA refers to ascorbic acid.

Nucleic acids exhibited high susceptibility to oxidation in the presence of haem iron. Ascorbic acid, depending on its concentration (Fig. 1), and concentration of DNA in the reaction mixture (Fig. 2) increased or slowed down oxidation rate.

LOWER CONCENTRATION OF DNA

HIGHER CONCENTRATION OF DNA