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# CONTROL OF MAILLARD REACTIONS IN LACTOSE HYDROLYSED UHT-PROCESSED MILK BY GREEN TEA EXTRACT

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**Introduction:** Existing literature show that Maillard reactions (MR) are more pronounced in lactose-hydrolysed (LH) milk and the heat load during UHT-processing may boost the reaction<sup>1,2,3</sup>. In the present work, we have investigated the effect of epigallocatechin gallate (EGCG)-enriched green tea extract (GTE) in controlling MR in long-term stored LH UHT-processed milk.

**Methods:** GTE was added to LH skim milk, UHT treated, stored at room temperature for 1 year and then analysed for free polyphenols,  $\alpha$ -dicarbonyls, polyphenol- $\alpha$ -dicarbonyl adducts and advanced glycation end-products (AGEs).

**Results:** The UHT-processing resulted in epimerization of EGCG into gallic acid (GA). The concentration of free EGCG/GA decreased dramatically during storage, indicating that polyphenols are bound to reactants, intermediates and/or products of MR. Mass spectrometric analysis confirmed that polyphenols could trap  $\alpha$ -dicarbonyls, including glyoxal and 3-deoxyglucosone, which was further correlated with the decreased levels of free  $\alpha$ -dicarbonyls in GTE-dosed milk. Moreover, the addition of GTE lead to the reduced formation of AGEs.

**Conclusions:** Polyphenols can form covalent adducts with MR intermediates, thereby, inhibit MR cascades in milk. The addition of GTE could be a viable strategy to improve quality and stability of LH UHT milk, but the effects of GTE on protein binding should be investigated further.

## References:

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