Concurrent Session 8A: PUFA/Heart Disease

Withdrawn

The influence of heat on biological activity and concentration of oleocanthal - a natural anti-inflammatory agent

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Background – The olive oil phenolic, oleocanthal is a natural non-steroidal anti-inflammatory compound that irritates the oropharynx in a dose-dependent manner. It has been proposed that the biological activity of oleocanthal is partially responsible for the beneficial health effects of the Mediterranean diet. Virgin olive oil containing oleocanthal is often added as an ingredient in a number of cooked dishes and therefore it is of great importance to understand how best to preserve the putative health promoting benefits of this compound, as olive oil phenolics are subject to heat degradation.

Objective – To investigate if oleocanthal is thermally degraded or its biological activity reduced during cooking.

Design – One extra virgin olive oil containing 54mg/kg oleocanthal was heated at varying temperatures (100°C, 170°C and 240°C) for set time periods (0, 1, 5, 20, 60, 90 min). Oleocanthal concentrations were quantified using HPLC and its biological activity determined with a taste bioassay measuring the intensity of throat irritation.

Outcomes – Results demonstrated that oleocanthal was heat stable compared with other olive oil phenolics, with a maximum loss of 16% as determined by HPLC analysis. In contrast, there was a significant decrease of up to 38% ($p<0.05$) in the biological activity of oleocanthal as determined by the taste bioassay.

Conclusions – Minimal degradation of oleocanthal concentration was observed upon heating however a significant decrease in the biological activity of this compound was noted with extended heating time. This has important implications for health in that, consumers may be unable to reap all of the putative health benefits associated with oleocanthal when adding virgin olive oil as an ingredient to dishes requiring prolonged heat treatment.