Title Control of salmon oil photo-oxidation during storage in HPMC packaging film: Influence of film colour

Author Muhammad Javeed Akhtar, Muriel Jacquot, Elmira Arab-Tehrany, Claire Gaïani, Michel Linder and Stéphane Desobry

Citation Food Chemistry, Volume 120, Issue 2, 15 May 2010, Pages 395-401

Keywords Edible packaging; Edible colours; PUFA; Light-oxidation; Fish oil

Abstract

The efforts are being made to design protective hydroxypropyl methylcellulose (HPMC) colour packages to avoid photo-oxidation of edible fats and oils. In the present study, edible films of HPMC containing different edible colours like blue, green, yellow, red and white were tested for their ability to avoid photo-oxidation in salmon oil. The samples taken in petri-dishes and covered with coloured HPMC films of thickness 40 μm were placed under fluorescent light at 20 °C. During storage, chemical parameter of oil quality such as fat oxidation was monitored during 8 days of storage. Oxygen consumption by gas chromatography, conjugated diene values by spectrophotometery and fatty acid composition by gas chromatography (GC) was measured. The results of our study show that HPMC films with suitable edible colours act as adequate light barrier to avoid photo-oxidation of salmon oil during extended storage. HPMC films containing white, red and yellow edible colours show good control of oil photo-oxidation almost similar to the control samples stored in darkness. Oil samples treated with blue and green edible films show gradual increase in oil oxidation with increasing time of light exposure. Oxidation behaviour of samples treated with blue and green films was almost similar to the samples stored in transparent films.