

JOURNAL



**INTERNATIONAL SOCIETY
OF ANTIOXIDANTS IN
NUTRITION & HEALTH**

POLYPHENOLS 2016

INSIDE

**10th World Congress on
Polyphenols Applications**

Porto, Portugal

Journal of ISANH – Open Access Journal

June 29 -July 1, 2016 | Vol 3 Issue 4 | DOI: 10.18143/JISANH_v3i4

DEVELOPMENT OF ANTIOXIDANT ACTIVE PACKAGING FILMS COATED WITH GALLA CHINENSIS EXTRACT IN A LAYER-BY-LAYER ASSEMBLY

ZEPPA, Cristina; MALUCELLI, Giulio; BARBOSA PEREIRA, Letricia (2); ZEPPA, Giuseppe (2)

1: Department of Applied Science and Technology (DISAT), Politecnico di Torino, Italy

2: Department of Agriculture, Forest and Food Sciences (DISAFA), University of Turin, Grugliasco (TO), Italy

zeppacristina@gmail.com

Oxidation reactions occurring on food surface are one of the main causes of deterioration of fresh and processed food products. Packaging is one of the most important tool to protect foodstuff from these oxidative processes. This work aims at developing innovative films by coating a polymer surface activated by plasma with a layer-by-layer structure made of chitosan and tannin extract from *Galla chinensis* (GT). Experiments were performed using three different polymeric films, which were coated with GT solutions at different concentrations (1, 3 and 5%). Oxygen transmission rate (OTR), thermal behaviour, antioxidant activity (DPPH) and total phenolic content (TPC) of active films were evaluated. The OTR values were reduced to one third compared to untreated films. The m-ATR spectra of the active films suggest that some interactions occurred between chitosan and the tannin extract. The new films added of tannin extract (TPC values between 0.5 and 5.4 mg GAE/dm² of film) showed a radical scavenging activity with values ranged between 10.5 and 55.8 $\mu\text{mol TE/dm}^2$ of film. **The obtained results** suggest that the active films produced could be exploited for developing active packaging suitable in the food industry to extend the shelf life of foodstuffs.