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PARTNERSHIP FOR RESEARCH AND INNOVATION  
IN THE MEDITERRANEAN AREA

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## ABSTRACT BOOK

*New advances from PRIMA projects  
for improving Mediterranean  
Agro-Food value chains*

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## Painel 6

### Elaboration and antimicrobial activity of films from plant residues incorporated with eucalyptus extract and oregano essential oil

Adma Melo<sup>1\*</sup>, Ana Isabel Lopes<sup>1</sup>, Eliana Pereira<sup>2,3</sup>, Cristina Caleja<sup>2,3</sup>, Lillian Barros<sup>2,3</sup>, Freni Tavaría<sup>1</sup>, Manuela Pintado<sup>1</sup>

*1 Universidade Católica Portuguesa, CBQF- Centro de Biotecnologia e Química Fina - Laboratório Associado, Escola Superior de Biotecnologia, Rua Diogo Botelho 1327, 4169-005 Porto, Portugal;*

*2 Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal;*

*3 Laboratório Associado para a Sustentabilidade e Tecnologia em Regiões de Montanha (SusTEC), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal.*

\*corresponding e-mail address: admelo@ucp.pt

Plant agro-industrial residue have been studied as sources of polymeric matrices to develop films. The objective of this work was to develop films using plant biomass residue and evaluate the antimicrobial activity after addition of the different antimicrobials. The films were developed from plant biomass residues, obtained from production of eucalyptus extract (EE) as a polymers source. The plant residue was characterized and films were developed using residue and alginate with the addition of natural antimicrobials [oregano essential oil – OEO (2%), EE (1%) and the mix with OEO (1%) and EE (1%)]. Then, the antimicrobial activity of the films was tested against *Staphylococcus aureus*. The results showed that the residue consist, mostly of insoluble fibers from approximately 80%, with lignin being the main constituent from approximately 50%. The three films were able to completely inhibit the *S. aureus* after 6h of exposure of the film with bacteria. The developed films can be considered potential solutions to be applied as biodegradable active packaging. However, more studies are needed to support this hypothesis. In addition, the use of these residues for film's production is a more sustainable alternative to the environment and even adds value to plant agro-industrial wastes.

**Key words:** plant residue, films, sustainable alternative

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