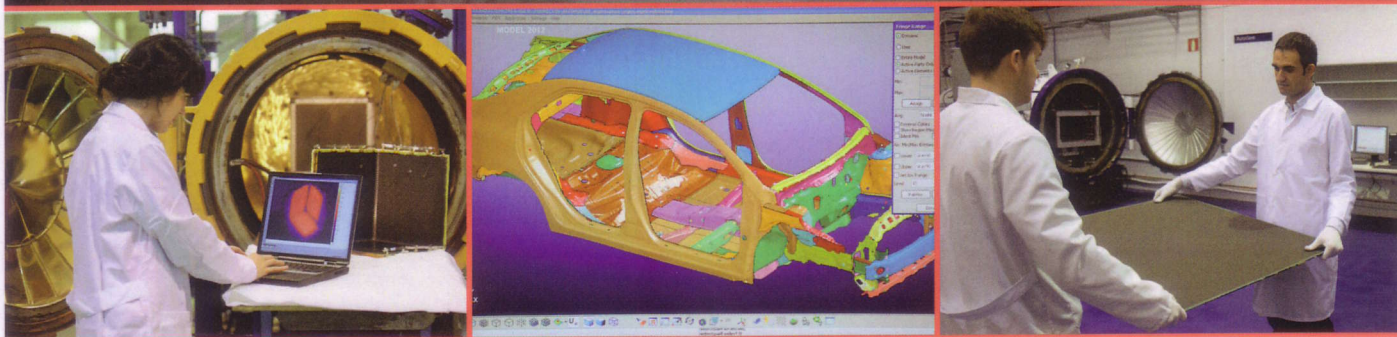




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Bacteriostatic effect of waterborne polyurethane-urea films containing bioactive plant extracts incorporated by different routes

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RESUMEN

The environmental awareness has promoted the development of new materials towards eco-friendly systems based on both, green synthesis processes as well as the renewable origin of the raw compounds. In this way, focusing on synthesis methods, the use of waterborne polyurethane-urea dispersions have gained attention due to their versatility leading to a wide variety of applications, broadening the range of applications. In addition, it is worth nothing that the dispersibility in water offers the possibility of incorporating soluble additives, such as plant extracts.

Therefore, in this work *Melissa officinalis* L. plant was selected in order to obtain bioactive plant extract, in order to be incorporated to a waterborne polyurethane-urea dispersion, varying their content as well as using three different incorporation routes. These dispersions were characterized and employed in the preparation of films which were analyzed from the viewpoint of physicochemical, thermal and mechanical properties, among others. Finally, the antibacterial properties of the films were analyzed after 1 and 4 days of incubation, where it was observed that the content and incorporation route of the extract influenced in the behavior of the films against common pathogens (*Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*).

Palabras clave: Polyurethane-urea dispersions, Plant extracts, Incorporation routes, Bioactive films.

