



**“G. d’Annunzio” University of
Chieti-Pescara**

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Dr. Marwa Fathy Hasan BALAHA nata in Arabia Saudita il 19/02/1986 –

titolare di borsa di ricerca rinnovabile dal titolo: “Valutazione biologica su cute in vitro di estratti” “Area 05 - S.C. 05/BIOS-12 - SSD BIOS-12/A - presso Dipartimento di Farmacia- prot. n. 3848 del 18/12/2024 Rep. 246/24. Tutor Prof. Susi Zara.

RELAZIONE

(From 15th January 2025 to 13th June 2025)

The research was focused on the extraction of natural products and their biological evaluation using full-thickness in vitro skin models. The project was divided into two phases: (i) extraction and preparation of natural samples, and (ii) establishment and biological testing on skin models. The first phase involved extracting bioactive compounds from liquid (must) and solid (pomace) phases of red and white grapes at early, mid, and late fermentation stages. Six liquid extracts were obtained using ethyl acetate, while six solid extracts were prepared using acidified water and acidified ethanol to ensure a wide range of polar and semi-polar compounds. In the second phase, full-thickness skin models were constructed using primary human fibroblasts and keratinocytes cultured at the air-liquid interface. Fibroblasts were cultured for 14 or 21 days, followed by keratinocyte seeding and co-culture. Inserts were then raised to promote keratinocyte stratification and differentiation for an additional 12 days. The resulting models showed multilayered structures and barrier functions comparable to native skin. Current work includes optimizing the fibroblast pre-culture phase to enhance skin model integrity. Future experiments will investigate the effects of the natural extracts on wound healing and immune responses, using histochemistry, immunohistochemistry, and immunofluorescence techniques.

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