

Anti-biofilm activity of individual and combined extracts of *Eucalyptus globulus* and *Juglans regia* against *Staphylococcus aureus*, a dairy industry pathogen

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Short Title: Anti-biofilm activity of plant extracts against *S. aureus*

ABSTRACT

This technical research communication describes the antibacterial properties of methanol:water extracts obtained from *Eucalyptus globulus* Labill., alone and in combination with *Juglans regia* L., against *Staphylococcus aureus* strains isolated from bovine mastitis (BM). BM presents an increasing incidence, being *S. aureus* one of the major causative agents. Antibiotics comprise the first and most common line of therapeutic intervention, being their current indiscriminate use largely associated with the appearance of increasingly resistant and infectious species. Particularly, *S. aureus* possesses a pronounced ability to form biofilms, and therefore, a pivotal interest due to its alarming pathogenicity. In fact, all strains tested proved to be good biofilm producers after 24 h of colonisation. The extracts, individually, lead to a considerable biofilm's cell reduction, but the combination of both plant extracts was more effective. Thus, the tested extracts may be promissory antimicrobial agents to be used for the control and management of dairy industry contaminations, and even in BM and food poisoning caused by *S. aureus*. Further studies are needed to understand which of the compounds present in the extracts are responsible for the observed effects, and the corresponding mode of action.