

Effect of *Melaleuca alternifolia* essential oil on biofilm structure and cell viability of *Candida albicans* SC5314

AUTHORS:

Oliveira, T.R.; Busato de Feiria, S.N.; Boni, G.C.; Barbosa, J.P.; Joia F.; Höfling, J.F.

INSTITUTION: Faculdade de Odontologia de Piracicaba FOP-UNICAMP (Avenida Limeira 901 – Bairro Areião – CEP: 13.414-903 – Piracicaba SP).

ABSTRACT :

Medicinal plants have long been used as a therapeutic alternative in the treatment of diseases, using their extracts, essential oils and their bioactive components. *Melaleuca* spp., is one of the well cited species in studies of microbiological therapeutic, including data from clinical trials of medicinal activity. The increased cases of antimicrobial resistance of some microorganisms, showed the importance of studies aimed to find new alternatives for antimicrobial compounds. The objective of this work aimed to evaluate the activity of commercial *Melaleuca alternifolia* essential oil, testing its anti-biofilm effect on *Candida albicans* SC5314 cells, as well as to observe the structure through electron microscopy, the effect of this oil on the structure of the in formation and mature biofilms and cell viability during the treatment with concentrations of 0.5 mg / mL, 1.0 mg / mL and 2.0 mg / mL of essential oil. Cells were grown in YPD culture medium at 30°C under overnight agitation. After the incubation period, the concentration was adjusted to 1×10^6 cells / ml in YNB culture medium and spread in 96-well microtiter plates. *M. alternifolia* essential oil was shown to be biologically active against biofilms in formation and mature biofilm of *C. albicans* SC5314, the metabolic activity of mature and developing biofilms was reduced at serial concentrations of 16 to 2 mg / mL and progressively increased from 1 mg / mL to lower concentrations. Quantitatively, when compared to the control without treatment, the concentrations of 1 mg and 2 mg / mL showed 80% of reduction on its viability. Through SEM, was observed changes in morphology and growth with decreased biofilm density, due to the reduction of the presence of hyphaes, interfering in its progression and later causing its deconstruction. Thus, we concluded that the essential oil of *Melaleuca alternifolia*, in the morphology, viability and progression of *Candida albicans* SC5314 biofilm cells.

Key-words: *Candida albicans*, biofilm, *Melaleuca alternifolia*, essential oil.

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