

**TITLE:** CHARACTERIZATION OF PROPIONIBACTERIUM ACNES POPULATION FROM BRAZILIANS SHOULDERS SKIN AND THEIR SENSIBILITY TO *C. martinii* EO AND GERANIOL

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**ABSTRACT:**

*Propionibacterium acnes* is the microorganism associated with the pathogenesis of acne; it is a gram-positive bacteria and anaerobic opportunistic and is an important factor in the activation of innate immunity in acne. *Cymbopogon martinii* (Roxb.) Wats var. *motia* essential oil (CMEO) is usually isolated by steam distillation of the freshly harvested leaves or partially dried leaves. CMEO has been widely used in aromatherapy as a tonic skin due its antibacterial, antiviral and anti-inflammatory activity. The aim of this research was to determined the antibacterial activity of CMEO and geraniol for *P. acnes in vitro* and possible alterations of the healthy microbiota after topical administration of CMEO and geraniol to human skin. Sensitivity test by broth microdilution was applied for *P. acnes* strains (n=9), divided in tree types I, II and III and various concentrations of CMEO and geraniol. Samples from Brazilian shoulder's skin microbiota (n=6) were collected before and after treatment with CMEO during 7 days, metagenomic analysis of the population structure of *P. acnes* by single locus sequence typing (SLST) were performed with Miseq illumina and typed in the *P. acnes* SLST database at <http://medbac.dk/slst/pacnes>. Sensitivity test reveals a homogenous sensitivity of *P. acnes* type I to CMEO and geraniol, the range of the minimun inhibitory concentration (MIC) was 0.7 to 1.5 mg/mL for the tree *P. acnes* types. MiSeq Illumina sequencing reveals that were not found *P. acnes* strains that are supposed to be acne related, strains called CC18 and treatment during 7 days with CMEO did not change the *P. acnes* population found on the samples when compared with the control samples. The sensitivity of *P. acnes* for CMEO and geraniol seems not be strain specific except in type I strains and the results from sequencing seems to be congruent with the theory that CC18 lineage is related to acne disease once the samples collected came from healthy skins and this specific lineage was not found among the others *P. acnes* strains.

**Keywords:** *C. martinii* essential oil, skin microbiota, *P. acnes*, antibacterial

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