

**Comparative antifungal activities of *Cinnamomum* spp. essential oils  
against non-*albicans* *Candida* species**

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Many plant species of the genus *Cinnamomum* have been used by humans since ancient times for their aromatic, flavoring and pharmacological properties. Candidiasis is the most common pathogenic disease caused by yeasts, but although non-*albicans* *Candida* species are less frequent they have become an emerging threat. The purpose of the study was to investigate the antifungal activity of essential oils from three *Cinnamomum* species: *Cinnamomum cassia* (cassia cinnamon), *Cinnamomum camphora* var. *linalooliferum* (Ho wood) and *Cinnamomum camphora* (white camphor). *Candida* species tested included *C. tropicalis* (ATCC 28707), *C. parapsilosis* (ATCC 22019), *C. glabrata* (ATCC 2001), *C. dubliniensis* (ATCC 646MYA) and *C. krusei* (ATCC 34135). The essential oils were evaluated in the broth microdilution test to determine the minimum inhibitory concentration (MIC), following CLSI recommendations with modifications. Aliquots of growth-inhibited wells were seeded on solid medium to verify fungicidal or fungistatic activity. *C. cassia* essential oil inhibited all *Candida* species in different concentrations; the most susceptible was *C. glabrata* (MIC 0,635 mg/mL), followed by *C. dubliniensis*, *C. parapsilosis* and *C. krusei* (MIC 1,25 mg/mL), and *C. tropicalis* (MIC 5,0 mg/mL). For *C. camphora* oil, *C. tropicalis*, *C. glabrata* and *C. krusei* showed similar inhibition (MIC 5,0 mg/mL), while *C. parapsilosis* and *C. dubliniensis* were not inhibited until the maximum concentration tested of 10,0 mg/mL. *C. camphora* var. *linalooliferum* essential oil was less effective, inhibiting only *C. glabrata* (MIC 2,5 mg/mL) and *C. krusei* (MIC 5,0 mg/mL). All antifungal activities detected were fungicidal. The chemical characterization of essential oils showed the majority presence of trans cinnamaldehyde for *C. cassia*, linalool for *C. camphora* var. *linalooliferum*

and cinnamic aldehyde for *C. camphora*. *C. glabrata* was more strongly inhibited by all *Cinnamomum* essential oils while *C. parapsilosis* and *C. dubliniensis* were the less affected. More studies are being carried out to investigate this differential mechanism of action.

Key-words: *Cinnamomum*; Candida; non-albicans; Antifungal activity.