

**CHEMICAL DIVERSITY AND BIOLOGICAL ACTIVITIES OF ESSENTIAL OILS  
FROM TWO CORDIA SPECIES**

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The genus *Cordia* (Boraginaceae) comprises more than 300 tropical species and is considered promising for pharmacological applications due to its chemical diversity and therapeutic uses. Despite this potential, few species have been investigated in detail, and there is still scarce knowledge about their essential oil (EO) composition and bioactivity. Among them, *Cordia glabrata* Cham. and *Cordia superba* Cham. are South American native trees with limited phytochemical and biological data. This study aimed to characterize the chemical composition of their leaf EOs and to evaluate cytotoxic, antimicrobial, and antiviral activities. Thirty-six compounds were identified in *C. glabrata* (89.7% of the total composition), dominated by hydrocarbon sesquiterpenes (42.2%) and oxygenated sesquiterpenes (35.6%), with selina-11-en-4- $\alpha$ -ol (17.8%), germacrene D (14.6%),  $\delta$ -cadinene (8.1%), germacrene A (8.0%), and  $\beta$ -elemene (7.0%) as major constituents. In *C. superba*, 31 compounds were identified (95.6%), mainly oxygenated diterpenes (42.8%), oxygenated sesquiterpenes (16.2%), and oxygenated monoterpenes (6.9%), with phytol (42.8%), *n*-hexadecanoic acid (8.4%), and intermedeol (4.8%) as the main components. Comparative analysis revealed clear chemical differences: *C. glabrata* exhibited a sesquiterpene-centered profile, whereas *C. superba* was characterized by a diterpene-rich composition. Biological evaluation showed distinct activity profiles. The EO of *C. glabrata* (OECG) exhibited cytotoxicity against HeLa ( $IC_{50} = 39.9$   $\mu$ g/mL) and U-251MG ( $IC_{50} = 42.0$   $\mu$ g/mL), but low activity against MCF-7 ( $>100$   $\mu$ g/mL). The EO of *C. superba* (OECS) displayed moderate cytotoxicity (HeLa  $IC_{50} = 55.1$   $\mu$ g/mL; U-251MG  $IC_{50} = 90.5$   $\mu$ g/mL). Antimicrobial assays indicated weak effects, with MIC values of 250–500  $\mu$ g/mL for both oils against *Staphylococcus aureus*, *Candida tropicalis*, and *Fusarium oxysporum*. In antiviral assays, OECG showed the highest virucidal potential, with selectivity index (SI) = 11 for HSV-1 and 12 for MAYV, while OECS showed lower potency (SI = 2 for both viruses). In conclusion, the essential oils of *C. glabrata* and *C. superba* present distinct chemical signatures associated with different biological activities. Although both oils exhibited modest cytotoxic and antimicrobial effects, the promising virucidal selectivity of *C. glabrata* highlights its pharmacological potential, while the diterpene-rich profile of *C. superba*, dominated by phytol, suggests alternative applications that warrant further investigation.

**Keywords:** *Cordia glabrata*, *Cordia superba*, *essential oils*, *cytotoxicity*, *antiviral activity*

