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UPLC-QTOF-MS characterization of *Cola nitida* resin and its antiprotozoal activity

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Cola nitida (Vent.) Schott & Endl., Malvaceae, is a native tree of tropical West of Africa, popularly known as *gbanja* or *goro*, and is called “noz-de-cola” or “cola” in Brazil. It is popularly used in central Africa for ritual ceremonies and for spiritual protection.¹ Nevertheless, resins in the ancient centuries had many applications including varnishes, adhesives, incense in churches, and for mummification. Modern analytical techniques revealed that resins contain antimicrobial compounds bearing different skeletons which are able to inhibit the growth of bacteria and fungi therefore, justifying its use in the mummification process.² Because the *C. nitida* resin has been poorly chemically investigated, this work aimed to establish its chemical profile by using UPLC-ESI-MS. The crude resin was collected from the trunk of *C. nitida* in the western region of the Republic of Cameroon and the tree was identified by the National Herbarium in Yaoundé where a voucher is registered under the code No. 14590SRF. The solid (2 kg) was poured onto DCM/MeOH (1:1, v/v) for 10 days, then filtered and evaporated *in vacuo* with a rotary evaporator to afford a colorless gum (1.8 kg). An aliquot of this solid (10 g) was chromatographed by vacuum liquid chromatography giving n-hexane (61 mg), DCM (388 mg), ethyl acetate (7065 mg) and MeOH (623 mg) fractions. The fractions were analyzed by UPLC-ESI-MS² (positive mode) and were exclusively rich in pentacyclic triterpenes related to α and β -amyrin. For instance, β -amyrin acetate ($[M+H]^+$ m/z 455.3519), was identified based on the following daughters ion m/z 407.3651, 271.2441, 217.1968, and 203.1804. These fractions were further evaluated on intracellular forms of *Trypanosoma cruzi* amastigote. Significant activities as well as good selectivity towards the host cell THP-1 were observed: FHex (IC_{50} 3.94 μ g/ml, SI 14.97), FDCM (IC_{50} 24.22 μ g/ml, SI 2.93), FEtOAc (IC_{50} 3.58 μ g/ml, SI: 24.55) and FMeOH (IC_{50} 3.82 μ g/ml, SI 16.57). The leishmanicidal activity on intracellular forms of *Leishmania amazonensis* amastigote was also assessed and the following results were obtained: FHex (IC_{50} 8.08 μ g/ml, SI 7.30), FDCM (IC_{50} 27.73 μ g/ml, SI 2.56), FEtOAc (IC_{50} 7.15 μ g/ml, SI: 2.56), and FMeOH (IC_{50} 8.23 μ g/ml, SI 7.69). FHex, FEtOAc and FMeOH which are exclusively rich in 3-hydroxy-urs-12,15-diene exhibited the better antiprotozoal activity, with the highest selectivity and therefore, the lowest toxicity if compared to FDCM. Moreover, FHex, FEtOAc and FMeOH were only about 1.5- fold less potent thiabendazole (IC_{50} 2.65 μ g/ml) but weakly active compared to amphotericin B (IC_{50} 0.065 μ g/ml).

Keywords: *Cola nitida*, pentacyclic triterpenes, UPLC-QTOFMS, antiprotozoal activity.

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