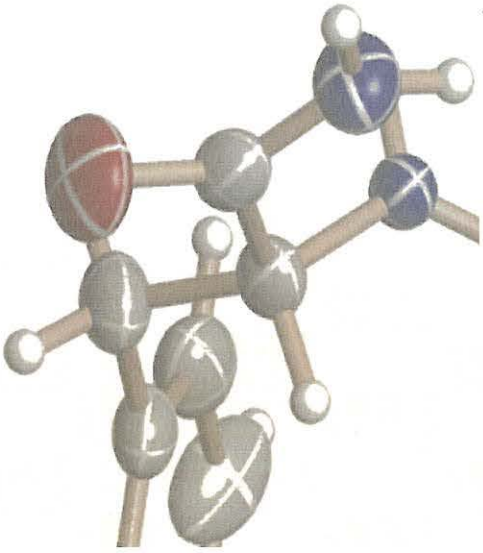

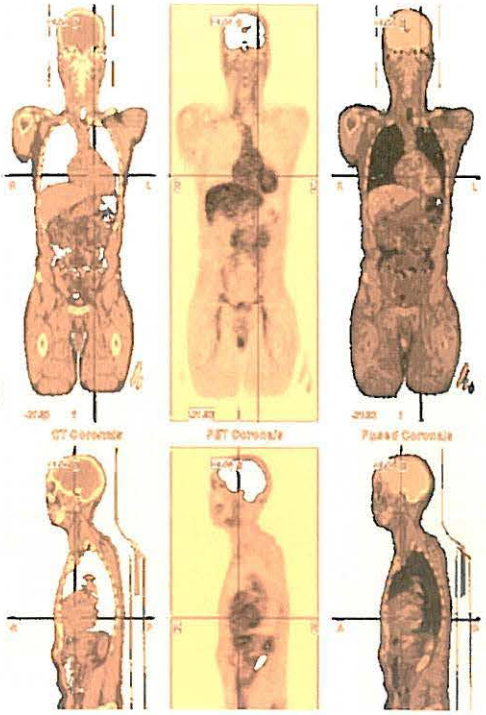

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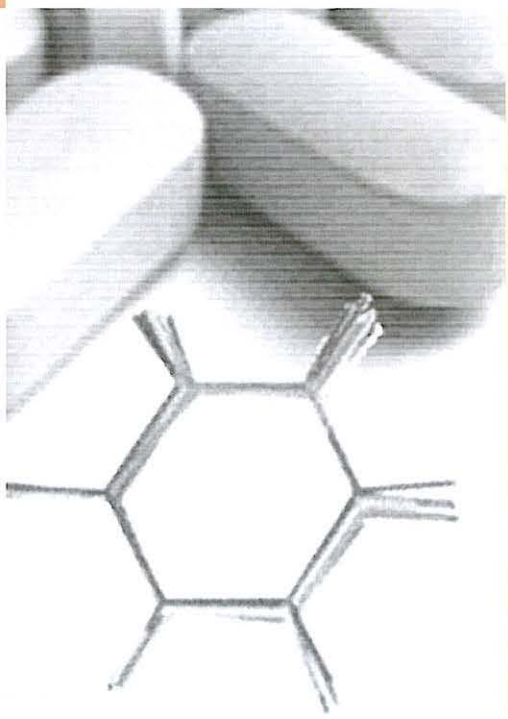

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A study on the medicinal mushroom *Cordyceps militaris* (L.) Link: chemical characterization, antioxidant, antimicrobial and antiproliferative properties

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The *Cordyceps* genus is well known for its medicinal properties. A number ofbioactive constituents from *Cordyceps* species have been reported such as antibacterial, antifungal, immunopotentiating or antitumor agents [1]. The anti-inflammatory and anti-angiogenic properties of *Cordyceps militaris* (L.) Link have been reported as also the antioxidant activity of its cultured mycelium [2]. In this work, the chemical characterization of *C. militaris* was performed, includingbioactive compounds (free sugars, unsaturated fatty acids, tocopherols, organic acidsand phenolic compounds). The antioxidant potential of its methanolic extract was evaluated (reducing power, scavenging activity and lipid peroxidationinhibition) as also the antimicrobial activity (tested towards Gram positive and Gram negative bacteria and eight microfungi) and antiproliferative properties (tested in different human tumor cell lines). Mannitol and trehalose were the main free sugars found in this species (2.01 and 24.71 g/100 g dw, respectively). The fatty acid quantified in higher amounts was linoleic acid (68.00% of total fatty acids). δ-Tocopherol was the only isoform of vitamin E detected (55.86 μg/100 g dw). The organic acids found in this mushroom were oxalic (0.33 g/100 g dw), citric (7.97 g/100 g dw) and fumaric (0.13 g/100 g dw) acids. *p*-Hydroxybenzoic acid was the only phenolic acid quantified in *C. militaris* (0.02 mg/100 g dw), but cinnamic acid was also found (0.11 mg/100 g dw). The lowest EC_{50} values for the antioxidant potential were presented in lipid peroxidation inhibition assays, namely in β-carotene/linoleate and TBARS assays (1.05 mg/mL and 0.77 mg/mL, respectively). The methanolic extract also revealed strong antibacterial and antifungal activities, and it was able to inhibit the proliferation of MCF-7 (breast), NCI-H460 (non-small lung),HCT-15 (colon) and HeLa (cervical) human carcinoma cell lines.

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