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### Evaluation of antioxidant and antimicrobial activities of essential oil and different extracts of endemic tree, *Abies numidica* growing in Algeria

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The Numidian fir (*Abies numidica*) which belongs to the family of conifers (Pinaceae) is a tree up to 20 m. *A. Numidica* appears only on the tops of mountains of Babors and Tababorts from Algeria. Fir forests of Babors receive in some places quantities greater than 2000 mm rain and the snow lasts 3-5 months a year. The aim of present study was to determine the antimicrobial and antioxidant activity of essential oil and different extracts from *Abies numidica* leaves. The 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay was used to detect *in vitro* the antioxidant activity. Antibacterial activity was tested against nine bacterial species, representing both Gram positive and Gram negative bacteria. Antifungal activity was evaluated using two *Candida* species. The results indicate that the crude methanolic extracts and the essential oil resulted in the highest antioxidant activities compared to other solvents. All extracts of *A. numidica* showed antimicrobial activity against both Gram positive and Gram negative bacteria, as well as fungi, especially methanolic extracts and essential oil. *A. numidica* could be exploited for the isolation of bioactive compounds which could be a potential source for antioxidant and antimicrobial activities. In this subject, we advice to conserve this tree using tissue culture and *in vitro* propagation because a little number (about 400 trees) of this fir exists and it is endangered extinction actually.

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### The fruit fly *Drosophila*: A model organism for assessing biodiversity

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A study has been undertaken to understand the distribution of *Drosophila* species in relation to altitudinal and seasonal variation in Srirangapatna hill, Karnataka State, India. A total of 10,571 *Drosophila* flies collected from 600 m, 750 m, 900 m and 1050 m altitudes were found belonging to 22 species of 4 subgenera. It is noticed that the subgenus Sophophora was predominant with 14 species and subgenus Drosilopa was least represented with only single species. Cluster analysis and constancy method was applied to analyze the species occurrence qualitatively. Further altitudinal increase in the population density, relative abundance of the different species at different seasons was studied. Simpson and Berger-Parker indices were used to study the biodiversity of *Drosophila* fauna. Simpson index showed low value 0.121 and Berger-Parker indices represent high values (1.027) at 600 m. Furthermore, the density of *Drosophila* changes significantly in different seasons ( $F=14.20$ ,  $df$  2, 9;  $P<0.004$ ). The study shows that the distributional pattern of a species or related group of species is uneven in space and time. *D. nasuta* could be considered as champion species, as they are found in all altitudes.

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