

Presentation title: “EXTRACTION of *Pinus halepensis* ESSENTIAL OIL AND CHARACTERIZATION BY IR AND UV-VIS SPECTROSCOPY”

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Abstract:

The plant used in this study is the leaf of the wild pine (*pinus halepensis*). The purpose of this work is extrication, analyzation and identification of the main organic component that occupies the highest percentage in this plant by using UV-VIS and IR Spectrophotometry. The leaf of this pine were taken from the Llogara mountain, Albania, at an altitude of about 1000m. Leaves were left for 24 hours to dry under normal conditions. The solvent that was used for the extraction of the essential oil, is hexane, with a purity of 99.9%. The Molar Mass is 86.18 g/mol, density 0.6548 g/mol, freezing point is -940 °C and boiling point 65-690 °C. The obtained extract was stored in hexane with formulas CH₃-CH₂-CH₂-CH₂-CH₂-CH₃. In this work, the selected plant, (*pinus halepensis*) was extracted by the steam distillation method using the Clevenger apparatus and the yield was 0.3%. The essential oil obtained by extraction with hexane solvent, was analyzed by UV-Vis and IR Spectrophotometry. IR Spectrophotometry: Liquid samples were micropipette onto a finely ground KBr surface. Measurements were performed with a “Nicolet 6700 spectrometer” manufactured by “Thermo Electron”. *Pinus halepensis* essential oil contains 50% β-caryophyllene, and 7% humulene or α caryophyllene. In the analyse with IR spectrum, we will focus only on caryophyllene, which is also the chemical component with the largest percentage in wild pine essential oil. The IR spectrum presents a signal positioned at the wave number 1637 cm⁻¹ and belongs to the vinyl group =CH₂ of caryophyllene. Since β-caryophyllene contains vinyl group in its chemical structure, we conclude that the signal at 1637 cm⁻¹ belongs to β-caryophyllene. The IR spectrum of wild pine essential oil suggests the presence of beta caryophyllene, which is also the main chemical component of this oil. UV-VIS spectrum: Measurements were performed with “Jenway 6800 UV-Vis spectrophotometer”. In organic compounds, four types of electronic transitions are distinguished: π→π*, n→π*, σ→σ*, and n→σ*. The last two transitions require very high energy and occur only in the deep UV region (below 200 nm) and therefore during various measurements only the first two transitions

$\pi \rightarrow \pi^*$ and $n \rightarrow \pi^*$ are used, which occur in area 200 nm to 700 nm. The presence of these signals indicates the presence of double conjugated bond and these signals refers to the presence of caryophyllene.

Biography:

Ms. Marisa Koci has studied Master of Science in Chemical Engineering at the University of Tirana and has focused her time on scientific research by participating in international conferences of chemists and chemical engineers in Croatia 28Hskiki, or being active as one of the organizer of the first international student conference at Aleksander Xhuvani University in Albania. She likes to be very active in topics that increase the interest and curiosity of society.