

Synthesis and Spectroscopic characterization of isomers 3-(n-methoxyphenyl)-2,3-dihydro-1H-naphtho [2,1]-pyran-1-one, C₂₀H₁₆O₃ (with n=2, 3 and 4).

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Introduction

Among the many organic compounds with very important applications recently reported we can find the flavone derivatives compounds. Flavones and flavonols constitute natural or synthetic compounds involving chemical diversity. Natural Flavones are found in variety of trees and plants¹. In this work, we report the preparation and structural elucidation of three isomers of flavanones of chemical formula C₁₆H₁₆O₃, 3-(n-methoxyphenyl)-2,3-dihydro-1H-naphtho [2,1]-pyran-1-one, with n=2, 3 and 4. The title compound was obtained in our laboratory and then its crystalline structure was identified by X-ray diffraction. The spectroscopy investigation has been carried out by Raman technique. The assignments of vibrational modes and detailed synthesis information also are presented.

Results and Discussion

The isomers were obtained in a round-bottomed flask (125 mL), placed in an ice bath, was added 15 mL of methanol, 2-hydroxy acetophenone (7.26 mmol; 1.38 g), 10 mL of 10% sodium hydroxide solution, and *ortho*, *meta* or *para*-anisaldehyde (7.93 mmol, 1.08 g) resulting in three isomers of flavanones of chemical formula C₂₀H₁₆O₃. The reaction mixture was kept under magnetic stirring at 80°C for 4h. After this period, acidification with acetic acid (5%) and extraction with chloroform were done. The solvent was then dried and evaporated. Subsequently Single crystals were grown from methanol solution by the slow evaporation method, providing light yellow Crystals.

The Fig 1. Show experimental Raman spectra of three isomers of flavanones in the range 970-1800 cm⁻¹. We assigned the peaks in the Raman spectra by comparison with references for the spectra of other molecules. Three carbonyl

stretching vibration of isomers molecules are observed between 1568 and 1673 cm⁻¹. In our spectral analyses stretching vibrations C-C in the phenyl rings were observed between 995 and 1426.

All isomers spectra show very intense peak around 1395 cm⁻¹ associated with stretching vibrations C-C in the phenyl rings.

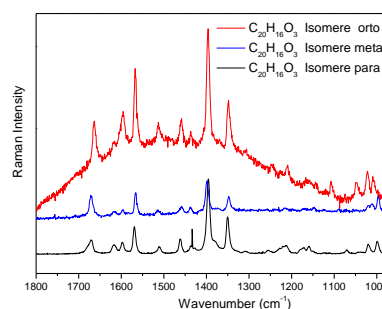


Figure 1. Experimental Raman Spectroscopy in the spectral range from 970-1800 cm⁻¹ of three isomers of flavanones of chemical formula C₁₆H₁₆O₃.

Conclusions

Synthesis information of three isomers of flavanones of chemical formula C₁₆H₁₆O₃ was presented here. The spectroscopy investigation has been carried out by Raman spectroscopy. The assignment of each normal modes was done based on basis of literature survey. This study furnishes description of vibrational properties of this material.

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