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absorbance spectrum by a Fourier transform. e two beams are totally in phase with each other; thus, they interfere constructively and lead to a maximum in the detector response. is position of the moving mirror is called the point of Zero Path Di erence (ZPD). When the moving mirror travels in either direction by the distance /4, the optical path (beam splitter–mirror–beam splitter) is changed by 2(/4), or /2. e two beams are 180° out of phase [6] with each other, and thus interfere

[10] to be due to aromatic C-H stretching (Table 2). In this view, the vibrational frequencies exhibited at 3434 cm^{-1} in the FTIR spectrum are considered to be due to C-H stretching vibrations of the compound. e C-C ring stretching vibrations occur in the region from 1642 to 1579 cm^{-1} in FTIR spectra.

Calculation

It is possible to calculate the value of a stretching vibrational frequency of a bond by use of Hook's law which may be represented as:

$$f_v = \frac{v}{c} = \frac{1}{2\pi c}\left[\frac{k}{\frac{m_1 m_2}{m_1 + m_2}}\right]^{1/2} = \frac{1}{2\pi c}\sqrt{\frac{k}{x}}$$

Where,

$$x = \frac{m_1\ m_2}{m_1 + m_2}$$

It is the reduced mass, m_1 and m_2 are the masses of atom in a particular band and k is the force constant. It is regarded as a measure of stiffness of the bond. For a single bond, it is approximately 5×105 dynes/cm. Its value becomes double and triple for a double and a triple bond, respectively. If we consider a diatomic molecule having resultant dipole moment, the vibratory motion of the nuclei of such a molecule may be similar to that of a linear harmonic oscillator. If the bond between two nuclei of diatomic molecule is distorted from equilibrium length L

cm^{-1} in the FTIR spectra [11] is assigned to C–O stretching vibration. In benzocaine, the very strong and sharp peak at 1217 cm^{-1} has been assigned to the C–O stretching. Taking the above band assignments, 1119 cm^{-1} and 973 cm^{-1} (Table 5) in FTIR spectrum of the sample under experiment are assigned due to C–O vibration. A number of C–H in plane deformation bands occur in the region from 973 to 901 cm^{-1}, the bands being sharp but weak to medium intensity. However, these bands are not normally important for interpretation purpose although they can be used. e aromatic C–H out of plane deformation bands occur below 700 cm^{-1} (Table 4). e bending vibration is generally found at lower wave numbers. e frequencies observed at 775 cm^{-1}, 705 cm^{-1}, 676 cm^{-1}, 592 to 491 cm^{-1} are assigned to be due to O=C–C , O=C–N , C=C–N and C=C–C bending (Figure 6) of the pyrimidine ring in the FTIR spectra of Xanthine and C–N–C bending vibrations are assigned at 498 cm^{-1} and 428 cm^{-1} [15]. Using the above analogy, the bands at 901 cm^{-1} to 775 cm^{-1} is due to C–H in plane deformation. e bands at 676 cm^{-1} is due to C–H out of plane deformation/C–C=O deformation (Figure 5).

Conclusion

Orange color sample is an antibiotic for gastric trouble given by physician for english medical treatment system and the yellow color

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sample is given for liver function problem. e remaining three drugs such as green sample, blue sample and brown sample are given for gastric problem by Ayurveda, Siddha and Unani treatment systems. An attempt has been made in this work to study the vibrations of the functional derivatives of all the ve samples. By observing the position, shape and relative intensities of the vibration bands in FTIR spectra of all the drugs, a satisfactory vibration band assignment has been made. FTIR analysis was conducted to verify the occurrence of chemical bonds between the English medical drug and Ayurveda, Siddha and Unani medical treatment drugs. e spectral analysis indicated that the speci c functional groups of the both types of drugs have almost the same chemical characteristics. e research reviews suggest that molecular interaction always could alter the chemical structure of the drug. As per the results of both types of medical treatment systems existing in India, it is concluded that both types of drugs have the same chemical bonds and characteristics but di erent reactions at molecular level in the human body.

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