

## DETERMINATION OF FENOFIBRATE, CIPROFIBRATE AND BEZAFIBRATE IN MIXTURES BY FTIR SPECTROSCOPY

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Fourier transform infrared spectroscopy (FT-IR) is a fast, reliable and non-destructive analytical technique for quantitative determinations of compounds from solid, liquid and gaseous samples. Applications of FTIR can be found in different fields (pharmaceutical, agrochemical, ...) and the number of articles published in the scientific literature has increased dramatically in recent years.

A FT-IR spectrophotometer (Perkin-Elmer GX), equipped with a MIRTGS detector, was employed for spectral measurements of fenofibrate, ciprofibrate and bezafibrate using a liquid transmission cell provided with sodium chloride windows. These drugs, used in the treatment of hyperlipidemia, possess similar structures but have with different chemical functions: ester and ketone (fenofibrate), carboxylic acid and amide (bezafibrate) and carboxylic acid (ciprofibrate). Several solvents (C<sub>6</sub>H<sub>6</sub>, C<sub>2</sub>Cl<sub>4</sub>, CHCl<sub>3</sub>, CH<sub>2</sub>Cl<sub>2</sub>, CH<sub>3</sub>CN and CD<sub>3</sub>CN) were investigated in order to determine the influence of solvent on the position, the multiplicity, the width and the asymmetry of the vibrational bands and to select characteristic absorption bands of the three compounds. Acetonitrile seems to be the most suitable solvent because it prevents the formation of intra- and intermolecular hydrogen bonds and thus it allows the quantification of the analyte by the absorbance measure of one single peak.

A FTIR methodology has been developed for the determination of fenofibrate ciprofibrate and bezafibrate in mixtures. Deuterated acetonitrile must be used for the quantification of fenofibrate in presence of bezafibrate, in acetonitrile, the wavenumber ranges are not wide enough to allow their discrimination.