

ABSTRACT
PHYSICAL CHARACTERIZATION OF
IBUPROFEN-STEARIC ACID BINARY MIXTURE

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The aim of this study was to investigate the solid phase behavior of ibuprofen and stearic acid in binary mixture. Hot contact method was used to identify the solid state interaction between these two compounds. Binary mixtures were prepared by mixing two compounds gently in a mortar at room temperature, whilst eutectic formation of binary mixtures were achieved by melting binary mixture on water bath as comparative sample. Physical characterization was carried out by Differential Thermal Analysis (DTA), Powder X-ray Diffraction (PXRD), Scanning Electron Microscope (SEM), and Fourier Transform Infrared (FT-IR) spectroscopy. Hot contact method showed that interaction between two compounds is eutectic formation with single blank line. The single blank line indicates conglomerate crystallization from formed eutectic. Eutectic formation also was seen on DTA thermograms which melting temperature of binary mixtures is lower than pure compound. Superimposing diffraction pattern of two compounds was obtained from PXRD analysis which is showing conglomeration of two compounds. The morphology difference of eutectic sample compared to pure compound can be seen in SEM analysis results that habit crystal of ibuprofen can't be clearly distinguished from stearic acid. FT-IR spectroscopy showed that there is hydrogen bonding interaction between two compounds.

Keyword : *Ibuprofen, stearic acid, binary mixture, eutectic formation, physical characterization*