OCCURRENCE OF POLYMORPHISM IN MELOXICAM RAW MATERIALS

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Introduction: Polymorphism occurs when a solid compound presents itself in two or more crystal forms. Polymorphs are compounds with the same chemical composition, whose molecules are arranged in, at least, two different ways in the crystalline state. Many physicochemical properties can vary as a consequence of the polymorphic form mainly the solubility and hence the bioavailability of pharmaceutical products. Meloxicam, a nonsteroidal anti-inflammatory and analgesic drug (NSAID), is an enolic acid oxicam derivative. It is frequently used to treat rheumatoid arthritis, osteoarthritis and other joint diseases. Five polymorphs are known, namely, forms I, II, III, IV and V. Objective: The aim of this study was to evaluate the occurrence of meloxicam polymorphs in five raw materials acquired from different suppliers. The reference standard (USP) was also analyzed. Results: All samples were characterized by powder X-ray diffraction (PXRD), infrared spectrophotometry (IR-ATR) and differential scanning calorimetry (DSC). After powder diffraction pattern analysis was possible to identify Form I in four samples of raw materials and in the reference standard (USP). As early as one of the raw materials was identified by the presence of the mixture of Forms I and III. The DSC and IR-ATR techniques also helped to confirm the results obtained by PXRD, showing differences between Form I and the mixture of Forms I and III. Because there is no official pharmacopoeic methodology for analysis and control of meloxicam polymorphs, we propose the methods mentioned above as a tool for quality control of meloxicam raw materials in order to avoid risks to patients. Financial support: CAPES; FAPEMIG.