SYNTHESIS OF CO-CRYSTALS RELEVANT TO PHARMACEUTICAL APPLICATIONS

Pharmaceutical co-crystals are composed of an active pharmaceutical ingredient (AI), either as a neutral or an ionic species, and another component (bioactive or not), held together by means of non-covalent, reversible interactions. With respect to the active component alone, co-crystals show different physic-chemical properties (stability, solubility, bioavailability) which can be very interesting from the pharmaceutical viewpoint.

GOALS

In principle, the formation of a co-crystal can be predicted on the basis of the structural properties of the interacting molecules, provided that the type of interactions are known. The detailed study of the intermolecular interactions between the active ingredient and the partner molecules in a series of co-crystals targets the identification of the "ideal partner". This study is completed by an investigation of pharmaceutically important co-crystal properties such as solubility, bioavailability and permeation through biological membranes.

INSTRUMENTS AND METHODS

Room temperature crystallization by slow vapor evaporation, X-ray diffraction techniques (both single crystal and powder) crystallographic databases, theoretical calculations.

MAIN SUBJECTS

General chemistry, Physical chemistry, Structural chemistry

RESEARCH GROUP

Valeria Ferretti
Valerio Bertolasi
Paola Gilli

COLLABORATIONS

- Prof. A. Dalpiaz (Department of Chemical and Pharmaceutical Sciences, UniFe)
- Dr. B. Pavan (Department of Biomedical Sciences and Surgical Specialties, UniFe)
- Dr. Mariachiara Pastore (CNRS, Vandoeuvre-lès-Nancy Cedex, France)