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Characteristics of small molecule crystals and pharmaceutical application

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Most of drugs are belongs to small molecules normally with molecular weight lower than 1000 Da and certain crystal forms. The polymorphs of small molecules are common phenomenon in the crystal research of drugs. The characteristics of different crystal forms not only affect the physical and chemical properties of the drugs, but also change their druggability. So, the discovery of optimal druggable crystal form is one of the core contents of drug preclinical research. The basic characteristics of an optimal druggable crystal form include good physical and chemical properties and the best bioavailability. Its druggable physical and chemical properties include the purity and stability of the crystal form, the solubility and the compatibility with excipients, etc. Good bioavailability means a good absorption rate and an effective blood concentration which could be achieved after oral administration. Until now, we have studied more than 100 different drugs and found their optimal druggable crystal forms for most of the drugs. The optimal druggable crystal forms are especially important in the innovative drug research. This work was supported by the CAMS Innovation Fund for Medical Sciences (2017-I2M-1-010) and the National Major Scientific and Technological Special Project for "Significant New Drugs Development" (2018ZX09711001-003-019).

Biography

Corresponding author Ph.D. Du Guanhua has his expertise in drug crystallography research and relationship between drug polymorphism and biological activity. He is professor of Institute of Materia Medica, Chinese Academy of Medical Sciences & Peking Union Medical College (CAMS & PUMC), Director of National Center for Pharmaceutical Screening. And he is President of Chinese Pharmacological Society, Member of Asian West Pacific Pharmacologist Association Executive Committee, Member of Chinese Pharmacopoeia Commission.

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