# Nanonization on biotechnological product: Nanocrystals and its polymorphisms

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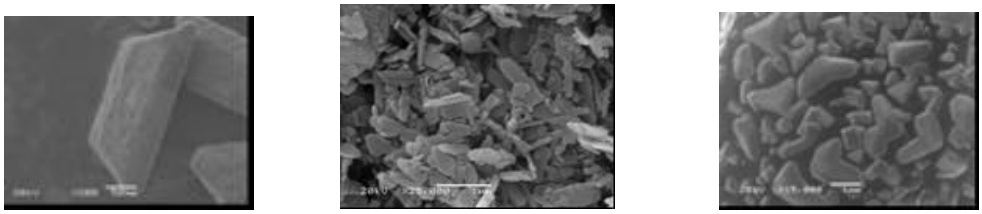
Muller *et al*. [1] developed the nanonization method by high pressure to produce pharmaceutical nanosuspensions using water as dispersion media. This procedure led us to enhance the drug solubility and as it was described elsewhere [1]. The aim of present work was to compare two different nanonization processes starting from crystals with size around 200 μm (Fig. 1A) that were obtained by fungal fermentation of vegetal materials (oats) (Farmabrasilis-Campinas, S.P.) [2]. The nanocrystals were prepared by 1) homogenization at high pressure and 2) by re-precipitation. In the homogenization process, the microcrystal were dispersed in Pluronic F68 solution and homogenized at 1500 bar in several cycles and, in the re-precipitation process the crystals were obtained by using DMSO/water treatment [3].



**A** **B** **C**

Figure 1: SEM micrograph of P-MAPA: A) before (x 300) and B) after (x 25000) homogenization at high pressure (HHP) (Modified from ref [4]) and C) after re-precipitation process (in DMSO/water) (x15000).

After nanonization, applying the homogenization process, the homogeneous nanocrystals with size of around of 200 nm with same format compared to the original crystals were obtained (Fig.1B) [4]. With this process the crystal size was reduced 1000 times. On the other hand,, when transformed the original crystal [2] by a re-precipitation method, nanocrystals were obtained with size of around of 200-1000 nm and appeared a polymorphisms as shown on Figure1C [4]. The differences between the particles obtained herein are under study in terms of its biological activities. This study shows the possibility to prepare P-MAPA nanocrystals 1000 folds smaller folds with or without polymorphism depending on the method used. Probably, these crystals with different format can be used to differentiate a specific target for some cellular activities, i.e. cancer.

Keywords: Nanonization, polymorphism, biological activities, nanocrystals, biotechnology
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