Poster Presentations

[MS10-P24] Internal standard for amorphous quantification of pharmaceuticals. Rafael S. Nunes[a,b], John S. O. Evans[b], Carlos O. Paiva-Santos[a].

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Amorphous Pharmaceutical materials have higher internal energy relative to crystalline state and this can enhance dissolution and bioavailability of medicines, and is also important in creating a strategy for processing or storage [1]. Quantification of amorphous content is therefore extremely important. To determine amorphous content by X-ray diffraction, the internal standard method is widely used [2] and although Al_2O_3 certified by NIST (SRM 676a) is one of the standard materials for this application [2-4], its coefficient absorption (cm-1) is sufficiently difference to pharmaceuticals products, like Mebendazole or MBZ (cm-1), that it can be difficult to get precise results [5]; and its high price can limit application with the large quantity of products pharmaceuticals industries might need to analyse. The purpose of this work is choose two materials as potential standards, LiF and Li_2CO3, which present an absorption coefficient of the same order of drug absorption coefficients (cm-1, cm-1) to show that is possible make a 'home characterized' standard and obtain high accuracy in amorphous quantification. To demonstrate that no interaction between proposed standards and MBZ occurs, the characteristic peaks of MBZ form C and A (4.9¡ and 7.7¡ in 2qð ðrespectively) were followed per 12 hours with each standard in powder x-ray diffraction. The microabsorption effect was explored from Rietveld quantitative analysis [6,7] of seven mixtures in different ratios of Al_2O_3:LiF and the amorphous content of LiF and Li_2CO_3, using SRM 676a as internal standard in three ratios (30:70, 50:50 and 70:30), were determined. To verify the accuracy of these new internal standards the amorphous quantification of MBZ has been performed with Al_2O_3, LiF and Li_2CO3 internal standards.

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