Supplementary Data

**The improved dissolution performance of a post processing treated spray dried crystalline solid
dispersion of poorly soluble drugs**

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Effect of compression on samples during intrinsic dissolution sample preparation

In order to eliminate the potential structural changes caused by compressive strength during the sample preparation step of IDR study, XRPD for the investigated sample in their compressed and non-compressed forms were performed. According to the result, there is no significant structural change between the compressed and non-compressed sample based on the same diffracted peaks seen in the diffractograms (Figure A and B). Overall, the calculated area under XRPD peaks showed only a slight different, i.e. less than 3.8% crystallinity different between the compressed and non-compressed samples (Table A). The same was noted for the humidity treated PIX-PVA system whereby compression process did not influence the overall crystallinity. To summarize, this result indicates the insignificant influence of compression on the investigated systems with exception of PIX-PVA system.

Figure A – X-Ray diffractogram of KTP-PVA systems: effect of compression onto the investigated systems.

Figure B – X-ray diffractogram of PIX-PVA: effect of compression onto the investigated systems.

Table A- The comparison of crystallinity or area under the diffractograms between the compressed and non-compressed sample used for IDR study.

Formulations	Crystallinity (%) / area under diffractograms	
	(Non-compressed)	Compressed
SD 30 KTP-PVA	13.46	13.85
Treated SD 30 KTP-PVA	49.35	49.51
SD 50 KTP-PVA	19.66	18.52
Treated SD 30 KTP-PVA	47.16	47.35
SD 10 PIX-PVA	2158 (area)*	2083 (area)*
Treated SD 10 PIX-PVA	10.05**	11.43**
SD 30 PIX-PVA	3730 (area)*	4006 (area)*
Treated SD 30 PIX-PVA	271.42**	250.65**

* In solid dispersion of PIX-PVA, a different polymorph, Form II, was detected. Hence, crystallinity estimation of the fresh SD could not be made (only area under the diffracted peaks of X-ray diffractogram was presented).

**Crystallinity changes of the post processing treated SD PIX PVA was calculated based on the initial integrated area of the peaks in freshly prepared SD.