**Engineering Amorphous Solid Dispersions of Abiraterone Acetate via HPMC HME: A Polymer-Centric Hot-Melt Extrusion Strategy for Formulation-Driven Bioavailability Improvement**

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**Table S1.** Estimation of Solubility Parameter of ABTA using the Hansen Group Contribution theory

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Structural Group | Frequency | Fd  (M.J./m3)0.5.  Mol | FP  (M.J./m3)0.5.  Mol | Eh  (j/mol) | Vm | Fd  (M.J./m3)0.5.  mol | F.P.  (M.J./m3)0.5.  Mol | Eh  (j/mol) | Vm |
| --CH3 | 3 | 420 | 0 | 0 | 33.5 | 1260 | 0 | 0 | 67 |
| CH2 | 7 | 270 | 0 | 0 | 16.1 | 1890 | 0 | 0 | 112.7 |
| >CH | 5 | 80 | 0 | 0 | -1 | 400 | 0 | 0 | -5 |
| >C< | 1 | -70 | 0 | 0 | 19.2 | -70 | 0 | 0 | -19.2 |
| =CH | 8 | 200 | 0 | 0 | 13.5 | 1600 | 0 | 0 | 108 |
| =C< | 3 | 70 | 0 | 0 | -5.5 | 210 | 0 | 0 | -16.5 |
| =N | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 |
| -COO | 1 | 390 | 490 | 7000 | 18 | 390 | 490 | 7000 | 18 |
|  |  |  |  |  | **Total** | 5680 | 490 | 7000 | 303.5 |
|  |  |  |  |  |  | δd = 18.71 | δp=0.072 | δh=4.80 |  |
|  |  |  | **Total solubility parameter** | | | 19.32 |  |  |  |

**Table S2.** Estimation of Solubility Parameter of HPMC HME using the Hansen Group Contribution theory

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HPMCAS | Polar forces | Dispersive forces | Hydrogen bonding | Total solubility parameters |
|  | **Δp** | **Δd** | **δh** |  |
| HPMC HME 15 LV | 11.9 | 18 | 12.3 | 24.83 |
| HPMC HME 100 LV | 12.5 | 17.9 | 12.7 | 25.25 |