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Preparation of a solid self-microemulsifying drug delivery system by hot-melt extrusion

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1 **Preparation of a solid self-microemulsifying drug delivery system by hot-melt**
2 **extrusion**

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17 **Abstract**

18 Hot-melt extrusion (HME) has gained increasing attention in the pharmaceutical industry;
19 however, its potential in the preparation of solid self-emulsifying drug delivery systems (S-
20 SMEDDS) is still unexplored. This study sought to prepare enteric S-SMEDDS by HME
21 and evaluate the effects of the process and formulation variables on S-SMEDDS properties
22 via Box-Behnken design. Liquid SMEDDS were developed, and carvedilol was used as a
23 class II model drug. Mean size, polydispersity index (PdI) and zeta potential of the
24 resulting microemulsions were determined. The extrudates were then obtained by blending
25 the lipid mixture and HPMCAS using a twin-screw hot-melt extruder. SEM, optical
26 microscopy and PXRD were used to characterize the extrudates. *In vitro* microemulsion

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