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Influence of the Ratio between Poloxamer 188 and Poloxamer 407 on Praziquantel Dissolution Profiles from Solid Dispersions †

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Abstract: Praziquantel (PZQ) is a commonly used antiparasitic drug, but its pour solubility makes its formulation difficult and causes a low bioavailability. In this work, solid dispersion (SD) technology was used as an alternative to improve PZQ solubility and dissolution rate. SDs loaded with 50% w/w of PZQ were prepared by the fusion method using as carriers Poloxamer 188 (P188) and Poloxamer 407 (P407) in different proportions (0%, 50%, and 100% in P188). Dissolution tests were performed, and dissolution profiles were analyzed and compared with the corresponding physical mixtures (PMs) using the Lumped model. The initial dissolution rates of SDs and PMs were 23.13 and 4.14 %/min for 0%P188, 37.21 and 11.45 %/min for 50%P188, and 53.13 and 20.20 %/min for 100%P188, respectively, while it was 0.24 %/min for the pure PZQ. Although both PMs and SDs enhanced the dissolution rate and the solubility of PZQ, SDs showed a better performance increasing the initial dissolution rate more than PMs. Furthermore, 100%P188 SD presented a nearly 2-fold increase in this parameter compared with 0% P188. These results conclude that PZQ SDs based on P188 would represent a valuable alternative to improve its dissolution behavior.

Keywords: solid dispersion; poor water-soluble drugs; polymeric carrier.

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Conflicts of Interest

The authors declare no conflict of interest.