

ABSTRACT

Albendazole (ABZ) is an anthelmintic drug that is widely used, but it has low solubility. Low solubility is a problem for a drug because it can cause a mismatch with bioavailability. Synthesizing ABZ into nano size, reported increase solubility up to 118.9 fold. The development of technology-based drugs in the form of making ABZ nanosuspension is interesting to be developed with simpler methods and materials that are more affordable. This research was conducted to form ABZ nanosuspension with a combination of polyvinyl pyrrolidone (PVP) K-90 and decyl glucoside (DG) polymers. The method used was ultrasonication with an experimental design in the form of a three-level factorial design using Minitab® 19 software. The optimization carried out resulted in 9 concentration variations of PVP K-90 and DG combinations with the composition in percent (%b/v) as follows F1 (2;2;10), F2 (2;15), F3 (2;20), F4 (2,5;10), F5 (2,5;15), F6 (2,5;20), F7 (3;10), F8 (3;15), and F9 (3;20). The formed formula was then tested for characterization including particle size (PS) and polydispersity index (PdI) values which were then processed using Minitab® 19 software. The results of data processing showed that F3 (2%; 20%) was the best formula with PS and PdI respectively 221.367 ± 39.26 nm and 0.371 ± 0.046 .

Keywords: Albendazole, decyl glucoside, nanosuspension, PVP K-90, three-level factorial design, ultrasonication.