IN VIVO ASSESSMENT OF NANOSTRUCTURED LIPID CARRIER FOR ORAL DELIVERY OF ZERUMBONE IN LEUKEMIC MICE MODEL

Heshu, S.R. 1,2,3*, Abdullah, R. 1,2, Hemn, H.O. 1,2, Chartrand, S.M. 4, Ahmad Bustamam, A. 2, Zahra, A. 5, Mahnaz, H. 2, Nozlena, A.S. 2

1 Faculty of Veterinary Medicine, Universiti Putra Malaysia, UPM Serdang, Selangor, Malaysia
2 Institute of Bioscience, Universiti Putra Malaysia, UPM Serdang, Selangor, Malaysia
3 Faculty of Veterinary Medicine, University of Sulaimany, Sulaimany City, Kurdistan Region, Northern Iraq
4 Director, DigiCare Behavioral Research, Casa Grande, Arizona, USA
5 Faculty of Science & Technology, University Kebangsaan Malaysia, UKM Bangi, Selangor, Malaysia

*Corresponding Author: heshusr77@gmail.com

Cancer nanotherapeutics are progressing rapidly with innovative drug delivery systems to replace conventional delivery systems. Although, antitumor activity of zerumbone (ZER) has been reported, there has been no available information of ZER-loaded nanostructured lipid carrier (NLC) affects murine leukemia cells in vivo. In a previous study, ZER was incorporated into NLC by high pressure homogenization (HPH) technique. Physicochemical characterization included particle size, polydispersity index, zeta potential, pH, entrapment efficiency, loading capacity, stability study, and in vitro drug release, as well as physicochemical stability after being autoclaved and stored at 4°C, 25°C and 40°C for 1 month, were examined. In this study, in vivo effects of ZER-NLC on murine leukemia WEHI-3B cells were investigated. The outcomes of histopathology, TEM and TUNEL assays of BALB/c leukemia mice revealed that the number of leukemia cells were significantly (P < 0.05) decreased in spleen tissue after four weeks of oral administration of ZER-NLC. In conclusion, NLC is suggested as a promising carrier for ZER oral delivery.