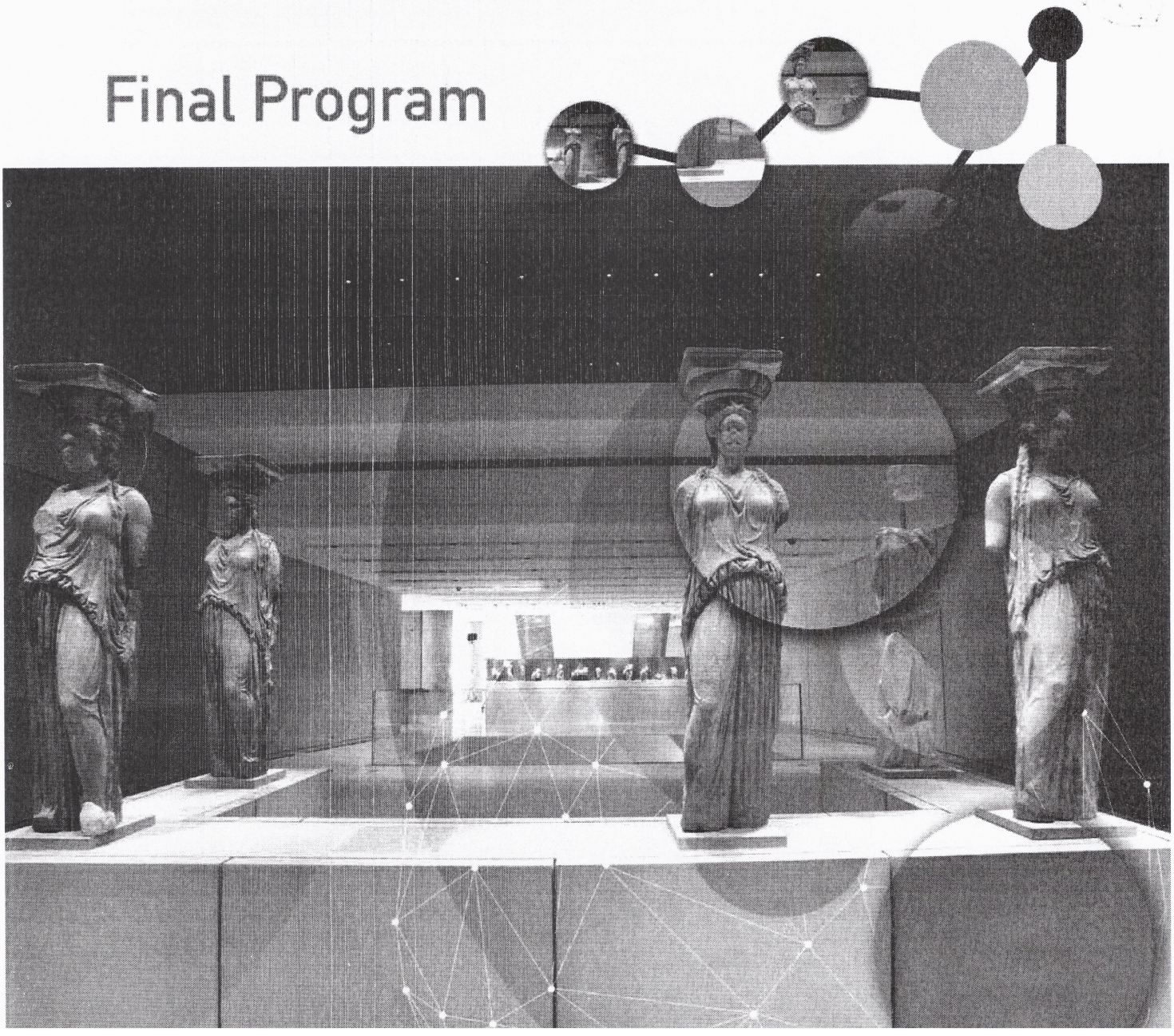
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FLURBIPROFEN LOADED EUDRAGIT® RSPO AND EUDRAGIT® RLPO NANOPARTICLES FOR EXTENDED ANALGESIC ACTIVITY

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Objectives: The purpose of the present investigation was to design and compare the release characteristics of sustained-release formulations of Flurbiprofen (FLB) Nanoparticles (NPs) by using spray-dryer technique using Eudragit® RLPO (RLPO), Eudragit® RSPO (RSPO) and RLPO:RSPO 1:1 ratio.
Methods: FLB was obtained from Sanovel (İstanbul/Turkey) as a gift. All the other chemicals and reagents used were of analytical grade.For the preparation of the polymeric solution with/without FLB, RLPO, RSPO and RLPO:RSPO (1:1 physical mixture) were dissolved in 100 mL methanol under a magnetic stirrer at 300 rpm for 1 hour to obtain a clear solution. FLB was added to this clear solution and stirred further for another 15 min. Spray-dryer (Spray-Dryer B-90, BÜCHI, Switzerland) was used in this study. The physicochemical characteristics of NPs were studied by Entrapment efficiency (EE%), Drug Loading (DL%), Dissolution Study, Release kinetics study with DDSolver, Morphology, Particle size (PS), Polydispersity Index (PDI), Zeta potential (ZP), Thermal analysis (DSC), X-ray difraction analysis (XRD), Fourier transform infrared (FTIR) spectroscopy and Nucleer magnetic resonance analysis (1H-NMR). Then, all formulations evaluated with cytotoxicity studies with 3T3 cells/MTT method.
Results:
Table 1. PS, PDI, ZP, EE% and DL% values
Figure 1. In vitro dissolution profile of pure FLB and NPs.
Conclusion: Higher values were obtained for all NPs prepared as a percentage of EE% and DL%. Testing in vitro release of pure FLB resulted in 85.816%±4.724 (mean±SE) release within the first 3 hrs while release from all NPs prepared were sustained for 48 hours. The release of FLB from FL-1, FS-1 and FSL-1 coded formulations were fitted with the Kormeyer-Peppas model according to the criterion. Initial rapid release observed from NPs was most probably dependent on the rapid dissolution of superficially adsorbed FLB and it was found that FLB entrapped in NPs was released in a sustained pattern.