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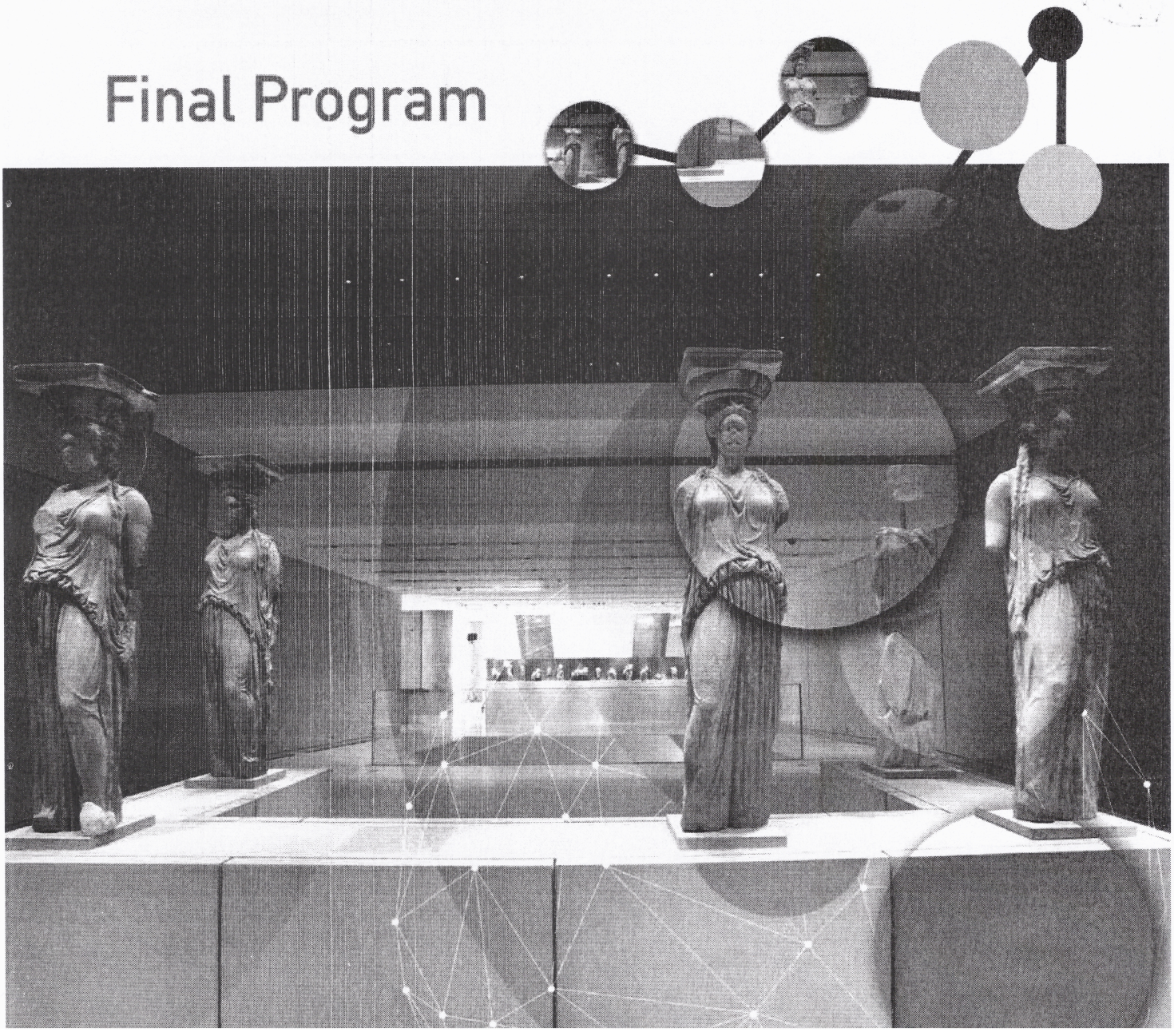

EP58

FLURBIPROFEN LOADED GEL FORMULATION AND CHARACTERIZATION WITH NEW DEVELOPED UPLC METHOD

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Objectives: The purpose of this study was to formulate Flurbiprofen (FLB) loaded gel for topical application. Additionally in this study also a new ultra performance liquid chromatography (UPLC) method was developed for the determination of FLB.
Methods: FLB loaded methylcellulose (MC), hydroxypropyl methylcellulose(HPMC) and Carbopol® 940 (C-940) based gel formulations were prepared with dispersion method. FLB loaded gels characterized for physical appearence, pH, rheology, drug content, dissolution study and release kinetics study with DDSolver software program. UPLC device used with reversed-phase C18 gravity column. 30:30:40(v/v/v) acetonitrile:methanol:30mM disodiumhydrogen phosphate buffer was used as the mobile phase. The method developed was validated for linearity, specificity, precision, sensitivity, accuracy,range and robustness.
Results: Linearity was determined to be at a concentration range of 5-50 µg.mL-1. The method developed for FLB was decided to be precise due to RSD values of <2% for repeatability and intermediate precision. Recovery of the method was satisfactory owing to <2% RSD value. The drug content was found to be in the range of 98.14-99.02% indicating the uniformity of the high drug content. At the end of the 6th hour in dissolution study, the FLB release from gels prepared with MC, HPMC, C-940 reached 99.7%, 99.5% and 87.60%, respectively. In the release kinetic tests with DDSolver, the release of gels prepared with MC and HPMC showed conformity with the weibull model, whereas the gel formulation prepared with C-940 showed a zero-order kinetics.
Figure 1. Regression profile and chromatogram of FLB
Table 1. Kinetic modeling of gel formulation by DDSolver program
Conclusion: According to the in vitro studies results, a useful methodology for the detection of FLB in topical formulations has been established, which will provide a future basis for the development of a topical dosage form of the drug with a desired release profile.