

# A Comparative Pharmacokinetic study of Aspirin Suppositories and Aspirin Nanoparticles Loaded Suppositories

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The main objective of the present work was to study the pharmacokinetic parameters and safety of the optimized aspirin suppositories and aspirin nanoparticles loaded suppositories and comparison both. ASA-nanoparticle prepared based on ionic gelation mechanism and optimized Fa9 formulation was isolated. ASA-suppositories prepared for the selection of best base composition and FS2, FS4, FS9, FS11 were selected for incorporation. Selected Fa9 formulation was incorporated into the selected based compositions based on fusion method and evaluated for various evaluation tests. The optimized formulation shows the drug release non-fickian type. Pharmacokinetic models were designed in rabbit model. Method developed in high performance liquid chromatography in rabbit plasma linearity was observed with  $r^2=0.999$  in sodium chloride buffer pH 2.5, acetonitrile, and isopropyl alcohol flow rate of 2ml/min, retention time of 5.310 minutes was observed. Same validate method was used for the determination of various pharmacokinetic parameters Area under curve (AUC<sub>0-t</sub>), Area under zero infinity (AUC<sub>0-infinite</sub>), C<sub>max</sub>, T<sub>max</sub>, half-life, elimination rate constant, Mean residence time. The histological examination was performed for four weeks at the end of each week animal was scarified and rectal tissue was isolated for histological examination. The comparative kinetics indicates the increase in T<sub>max</sub>, T<sub>1/2</sub>, AUC<sub>0-t</sub> and AUMC<sub>0-infinite</sub>, MRT in the ASA-nanoparticles loaded suppositories when compared with ASA-suppositories. Morphological examination revealed the histological changes such as ulceration and necrosis due to continuous use of ASA-suppositories. ASA-nanoparticles loaded suppositories proved to safe and effective with no observed histological changes.

**Note:** This work is partly presented at Webinar on Clinical Pharmacy, going to be held on May 31st, 2021 GMT+1.