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Formulation and evaluation of in-situ niosomal gel for the treatment of migraine

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Migraine is a primary headache disorder characterized by recurrent headache that are moderate to severe. Sumatriptan is a second generation triptan drug that is used for treating migraine headaches. It belongs to a selective serotonin receptor agonist class of drugs. The main aim of the study was to prepare and evaluate *In Situ* niosomal gel of Sumatriptan and optimise the concentration of different non-ionic surfactants and cholesterol by ethanol injection method and also to optimise the Noveon AA-1 polycarbophill, Carbopol 974 and HMPC K15M polymers concentration in different ratio of niosomal gel and target the brain by the nasal route to increase the sustain effect of the drug. The Sumatriptan niosomal formulations were characterised for vesicular shape, size, zeta potential, entrapment efficiency. The formulations exhibited entrapment efficiencies of 51.33±0.42% to 67.43±0.95%. The optimised formulation of Brij 58 and cholesterol in (4:1) prepared by ethanol injection method exhibited vesicle size of 361.3±0.65 nm, zeta potential of 13.1 mV entrapment efficiency of 67.43%. The optimized batch of the niosomal gel showed better sustained effect of 50% within 6hr after *in-vitro* release followed by zero order kinetics of drug release. It showed good rheological property, desire pH, good gelling capacity and 95.98% drug content. It was concluded that the developed *In-Situ* niosomal gel formulation had well sustained effect and it may show better sustained effect if *in-vivo* has to be done.