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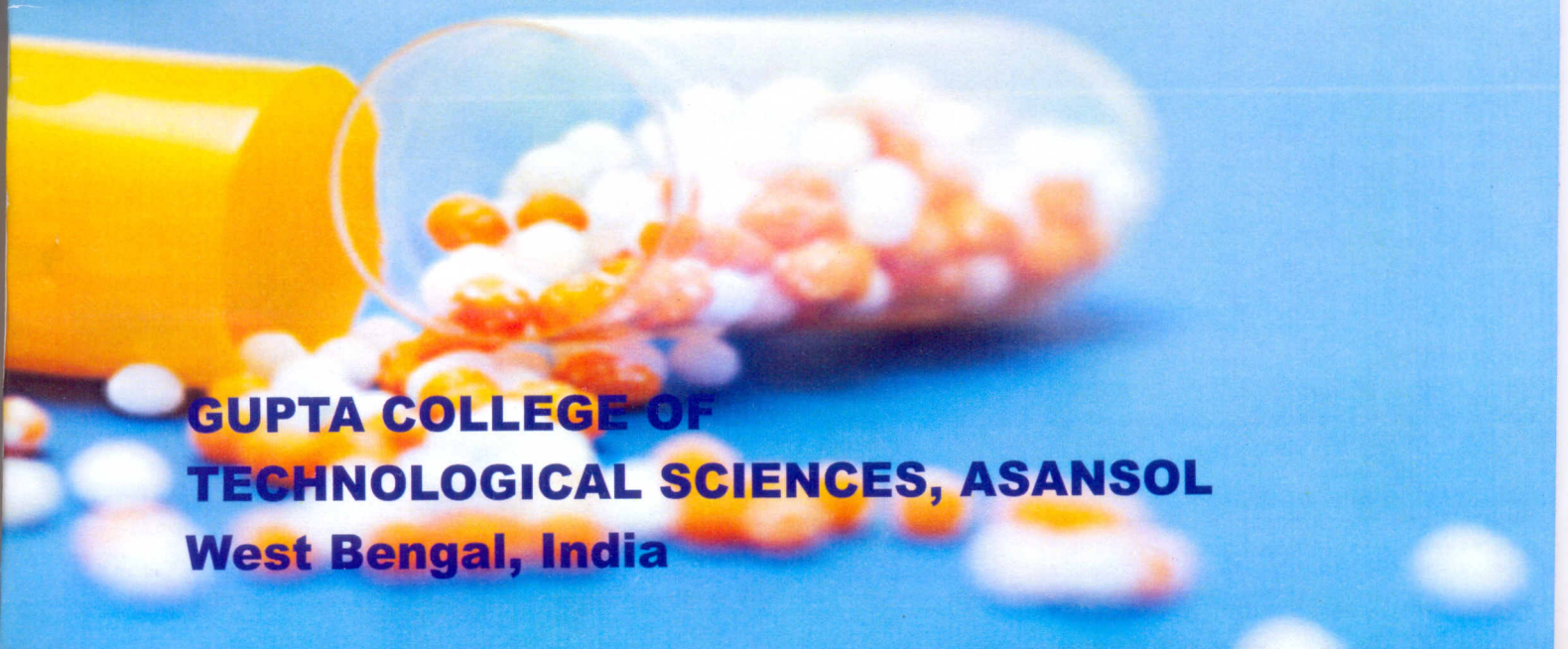

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Preparation and *In-Vitro*Evaluation of Water Soluble and Insoluble Drugs from HPMC Based Matrix Formulation : An Investigation of Drug Solubility on Their Drug Release

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Abstract

Aim of the present study was to fabricate a modified release formulation of Verapamil hydrochloride and Aceclofenac as HPMC K15Mbased matrix formulation and to find out the effects of drug solubility on the drug release kinetics of both water soluble and insoluble drugs. All the formulations were prepared by the direct compression method andwere subjected for various physicochemical parameters, water uptake, *in-vitro*drug release and SEM studies. Drug solubility showed a significant effect on the drug release kinetic and mechanism from the matrix formulation. Water soluble drugs required a larger amount of polymer to sustain the drug release compared to the insoluble drug. Drug release study showed that the matrix of insoluble drugs followed zero-order release mechanism whereas water soluble drug followed non-Fickian diffusion mechanism. SEM study revealed pore formation on the tablet surface that differed depending on drug solubility.*t*-test suggest that at same polymer concentration there was a significant difference between the release pattern of both drugs. So, it was concluded from the above research that drug solubility plays a significant role on drug release from HPMC based matrix formulation.

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Attention Deficit Hyperactive Disorder

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Abstract

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood disorders and can continue through adolescence and adulthood and makes it difficult for children to pay attention or control their behaviour. 6%-8% of school aged children are affected in USA. Symptoms of ADHD include-inattention in listening, talking out of turn, frequent interruption and disattraction while doing any tasks, losing of things, engaged in dangerous behaviour. Scientists have found that a deficiency in the specific neurotransmitters norepinephrine and dopamine cause the ADHD disorder. Neurotransmitters are used by the brain to stimulate or repress stimulation in brain cells. In ADHD children both system of stimulation and repression are not working correctly. The most popular drug treatments are stimulant medications that work by causing the brain to synthesize more nor-epinephrine by 3 processes, as affecting release, uptake inhibition and enzymatic inactivation of transmitters. Stimulants like amphetamine, methyl phenidate and nonstimulants like clonidine, atomoxetine etc. are in use till date. Apart from medications, researchers have found that behavioural therapy, positive parenting, neurofeedback, exercises including brain gym, interactive metroneme training, meditation and diet excluding additives are effective on their way to cure ADHD. In the recent past, metacognitive therapy has gained a considerable attention to the researcher which works such a way so as to improve organizational skills, planning, changing of thinking pattern even life style of individual. Metacognitive therapy helps the individual to self analyse and to solve complex problems. Researchers defined 'improvement' as atleast 30% reduction in ADHD symptoms.