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Evaluating aloe vera powder as bioavailability enhancer

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Objective: The object of the present investigation is to evaluate the aloevera freeze dried powder to improve the solubility of curcumin. To characterize the aloevera freeze dried powder for its compatibility with drugs.

Methods: Curcumin is formulated as tablets with different ratios of aloevera powder. Characterization of aloevera includes solubility, IR scan, UV absorption curve, the inertness of the aloevera powder and compatibility with curcumin was analyzed by UV and IR scans for the compatibility. The solubility studies were performed in different pH and solvents for curcumin and the inclusion of aloe vera shows a better solubility profile for curcumin. The trail batches were formulated to find the better ratio of aloevera to increase the solubility , thereby the bioavailability of curcumin. Curcumin is formulated as tablets by direct compression method.

Results: The prepared tablets were subjected for the quality control studies. In vitro release studies suggest that the release profile of curcumin was found to be better with aloevera powder. The concentration of aloevera is directly proportional to the drug release. It is evident that aloevera can be used as a bioavailability enhancer.

Conclusion: To conclude, aloevera freeze dried powder can be further evaluated for increasing the solubility of water insoluble drugs. The toxicity studies may be carried out to prove the safety of this novel solubility enhancer.

Compression coat assisted targeted oral controlled release tablets for a synergistic combination

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Oral absorption of metformin is confined to the upper intestine posing problems in the formulation of extended release tablets. Therefore, the objective of the present study was to develop hydroxypropylmethylcellulose based controlled release mucoadhesive core tablets of metformin and confine the tablets at the specific site in the GIT from where the drug is absorbed maximum to facilitate extended drug release. Glipizide was also incorporated for synergistic action, which is well absorbed throughout the GIT. Protective coating with a combination of pH sensitive polymers viz., keltone®-LVCR and eudragit®-EPO powder with opposing solubility and swelling behaviour in various pH fluids of the GIT, protected the core tablets from mucoadhesion till the targeted site was reached. Appropriate quantity of disintegrant in the coat aided coat erosion and assisted therapeutic concentrations of drugs release from the gastric region itself as the drugs are meant for diabetic patients. In vitro coat intactness test ensured and in vivo studies on rabbits confirmed that the tablets were targeted and contained in the specific site for longer duration of time which was evident from the improved pharmacokinetic parameters of metformin ($p<0.05$). Standardized formulation was found to be stable during stability studies conducted as per ICH Q1C guidelines.

By products of water chlorination and their impact on human health

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Climatic conditions are fundamental to life on earth and their destruction or disturbance by direct or indirect human activities is the greatest threat to human health. Human life on earth is directly associated with environmental factors such as "air" and "water". Pollution of air by toxic substances by the activities of mankind has shown to cause serious health issues, including damage to the immune, respiratory, neurological, and reproductive systems, and other health problems like cancer. Water intended for human consumption should be free from microorganisms and toxic substances. Chlorination is an inexpensive and effective process for disinfecting water worldwide. During disinfection chlorine generates hundreds of different by-products, called Chlorination By-Products (CBPs) such as tri-halo methanes (THA) and halo acetic acids (HAA) at low levels and their impact on human health is poorly studied. In this article we address the action of two HAAs, Tri-and Di- Chloro acetic acids (TCA and DCA) in the progression of cancer and neurodevelopment disorders. These CBPs in combination with air pollutants may adversely influence the human health and thereby affect the socio-economic status of low-income and geographically vulnerable populations.