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Local mucoadhesive drug delivery approach for furazolidone against *Helicobacter pylori*

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Helicobacter pylori in stomach is considered as one of the major challenges for the clinicians in terms of resistance. Due to emergence of resistant strains 60-70% of eradication rate is decreased with conventional triple therapeutic regimen. Short resident time of anti Helicobacter pylori drug also leads to failure in complete eradication of the microbe. In the current study, the use of furazolidone mucoadhesive formulations (for local drug delivery approach) to increase the residence time of this antibiotic was studied to overcome above mentioned shortcomings. Two different approaches of mucoadhesive formulation were optimized in terms of residence time and pH of the surrounding environment to attain the desired drug concentration for effective length of time. One of the approach used comprise of polymer coated microparticles and the other consists of mucoadhesive liposomes. Chitosan was used as a mucoadhesive polymer in both approaches and the formulations were investigated on two different pHs. For liposomal mucoadhesion affectivness, fluorometry assay was performed by using coumarin-6 as Fluorophore and the results were further confirmed by the florescence microscopy. Colorimetric method with Periodic Acid Schiff (PAS) Staining of sigma mucin type I was used for microparticles mucoadhesion analysis. In liposomal formulations, 23% mucoadhesion was observed after 6 hours at pH 1.3 and 59% mucoadhesion after 6 hours was detected at pH 4.5. In the case of microparticles, concentration of cross linking agent (glutaraldehyde, GTA) used was also a determining factor of mucoadhesion in addition to the pH effect. Increase in the concentration of glutaraldehyde have negative impact on mucoadsorption however, increase in pH increase mucoadhesion and vice versa.

Biography

Muhammad Irfan Alam is a PhD student at the University of Sunderland, UK. His research project is about, "Mucoadhesive and mucopenetrative micro- and nano-particulate drug delivery systems of antibiotics to target *Helicobacter pylori* in stomach". He has completed MPhil Microbiology in 2009 and worked as a Lecturer in Pak International Medical College for two years.

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