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Sustained release of amoxicillin trihydrate for oral drug delivery system

Abdulrhman A Akasha
Tripoli University, Libya

Biodegradable macro-particles may develop improved drug delivery system to gastrointestinal tract, for treatment of Helicobacter pylori, included peptic ulcers. Amoxicillin trihydrate macrocapsules have the ability to produce thus effect for extended period, were prepared with beeswax as matrix using solvent evaporation techniques, to produce there different 25% and 50% coating macrocapsules. Macro particles were examined by optical microscopy and showed spherical shape; the size of particles was determined by using sieve technique and the average size found 350mm for all batches. IR study was carried out to check the compatibility between the selected polymer bees wax and amoxicillin trihydrate. This study was performed to assure that there is complete physical entrapment of the drug into the polymer without any mutual interaction. Initial in vitro experiments were under taken to examine the degradation rate in phosphate buffer at 37°C, pH 5.2, the process was followed up to 8 hours by which 34% and 75% of particles mass had eroded for 25% and 50% coating macro capsules respectively. However, the release of amoxicillin trihydrate occurred gradually sustained release 88% and 47% up to eight hours for 25% and 50% coating batches respectively compared to the control of amoxicillin which completely released from the first hour. The macro-particles and control were subjected to microbiological test, the amoxicillin trihydrate and the formulations were effective against non-pathogenic bacterial strains of Staphylococcus aureus and E. coli but not effective to more resistance bacteria such as P. aeruginosa microbiological test.

Akashaabdu@yahoo.co.uk