Characterization of Processed Poultry Egg Shell Powder as Potential Tablet Diluent

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Abstract:

Pharmaceutical excipients have become more complex now with reported and documented adverse effects. The present study focused on processed Poultry Egg Shell Powder (PESP) as a natural tablet diluent with optimal excipient functionality and safety profile. The eggshells were collected, boiled, cleaned and processed into a fine powder with a high-speed laboratory mechanical grinder, sieved through the #60 mesh. Processed PESP was characterized in terms of micromeritics, surface morphology (SEM), crystallinity (XRD), functional groups (FTIR), phase changing properties (DSC) microbial load and In-vitro cytotoxic study (MTT). Both direct compression and wet granulation method were used to prepare placebo as well as drug loaded tablets. The prepared tablets were studied for tableting properties. PESP was found to be fairly compressible with fair flow character SEM revealed irregular particles structure of a porous nature, whereas high crystallinity was confirmed by XRD. FTIR spectra indicated no significant interactions with other standard excipients, drug. DSC determination revealed absence of sharp peaks above 200 °C implies no significant decomposition of calcium carbonate. Microbial studies demonstrated bacterial, fungal growth was well within limits. In-vitro toxicity studies revealed PESP had no detectable toxicity, even at the highest tested concentrations. Both Placebo and drug loaded tablets exhibited optimal tableting properties and acceptable drug release patterns. Processed Poultry Egg Shell Powder (PESP) might be used a natural tablet diluent as an additional tablet excipient with established safety profile

Keywords:

Poultry Egg Shell Powder, Tablet diluent, Characterization, Fair flow.