ABSTRACT

Solid lipid microparticles of controlled release Candesartan cilexetil (SLM-1 to SLM-12) were prepared by fusion method using different ratios of lipophilic excipients such as hydrogenated castor oil, stearic acid, cetostearyl alcohol and carnauba wax. The drug content and in vitro drug release of the prepared Candesartan cilexetil microparticles showed favourable drug content and satisfactory drug release. The formulated solid lipid microparticles were further used for the development of controlled release compressed tablets and floating tablets of Candesartan cilexetil.

A total of 12 formulations (F1 to F12) of compressed tablets of Candesartan cilexetil were prepared by direct compression method and evaluated for physicochemical properties and in vitro dissolution. All the prepared formulations showed almost uniform mass, thickness and drug content, and also indicated excellent mechanical strength. The in vitro release studies of compressed tablets of Candesartan cilexetil provided that the formulations prepared with cetostearyl alcohol showed maximum drug release in a controlled manner when compared to all other formulations prepared with hydrogenated castor oil, stearic acid and carnauba wax. Among the 12 formulations, four formulations (F9, F10, F11 and F12) were selected as the best formulations on the basis of in vitro dissolution and further subjected for accelerated stability studies. The accelerated stability studies data of selected formulations of compressed tablets of Candesartan cilexetil showed that there were no significant changes observed in the drug content, in vitro drug release
and also showed satisfactory appearance, thickness, weight variation and
hardness during and at the end of the accelerated study period.

Eight formulations of floating tablets of Candesartan cilexetil (F1 to
F8) were formulated using different concentration of lipophilic excipients
such as cetostearyl alcohol, hydrogenated castor oil, stearic acid and carnauba
wax, and hydrophobic polymer ethylcellulose by direct compression method.
Sodium bicarbonate and citric acid were used as gas generating agents;
magnesium stearate and talc were used as lubricants. All formulations of
floating tablets of Candesartan cilexetil showed almost uniform mass,
thickness and drug content, and also indicated excellent mechanical strength.
The swelling indices increased in the following order, F1 < F3 < F2 < F6 < F4
< F7 < F5 and F8. The formulations with higher concentration of
ethylcellulose (F4, F5, F6, F7 and F8) showed total floating time of >24 h.
The formulation F5 showed maximum and linear in vitro drug release
throughout the study period when compared to all other formulations, which
was selected as best formulation and further subjected to accelerated stability
studies. The accelerated stability studies data of selected formulation F5
revealed that there were no significant changes observed in the drug content
and also showed satisfactory appearance, thickness, weight variation,
hardness, friability, in vitro buoyancy and in vitro drug release during and at
the end of the accelerated study period.

In vitro drug release profile of pure Candesartan cilexetil in
phosphate buffer (pH 7.2) was compared with in vitro drug release of selected
compressed tablets of Candesartan cilexetil (F11) and floating tablets of
Candesartan cilexetil (F5). The results proved that the drug release was more than 90% in a controlled manner in the compressed tablets and floating tablets of Candesartan cilexetil when compared to pure drug.