Formulation and In Vitro Evaluation of Nimodipine as Orodispersible films (ODFs)

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Abstract

Orodispersible films (ODFs) are the most innovative form of oral solid dosage forms because of their flexibility and comfort.

Nimodipine is a calcium-channel blocker, it is a 1,4 - dihydropyridine calcium channel blocker that used to improve neurologic outcome following subarachnoid hemorrhage (SAH) by reducing the incidence and severity of ischemic deficits. , it belongs for class II drugs (low solubility – high permeability) according to biopharmaceutics classification system (BCS) .

The objective of this study is to prepare nimodipine as orodispersible films using solvent casting method as an attempt to enhance oral bioavailability and improve patient compliance.

The nimodipine ODFs were prepared using three types film forming polymers with different concentration such HPMC E3, HPMC E5 and HPMC E15, using (Glycerin) as plasticizer and (Poloxamer 407) as surfactant.

The effect of different concentrations and types of polymers, on mechanical properties such as (folding endurance and percent of elongation) and the in-vitro evaluation parameters such (disintegration time, surface pH, weight variation and dissolution profile) were evaluated.

HPMC E5 films showed slightly higher cumulative % drug release than films of HPMC E3 and HPMC E15 at the same concentration of plasticizer and surfactant and the results show that formula F4 containing 10 mg of nimodipine,

15 mg of HPMC E5, 10 mg of glycerin, 2.5 mg poloxamer 407 and 2.5 mg of crosspovidone showed the highest cumulative % drug release of 78% ± 6.2 at the end of 2 min and 80% in 5 min, disintegration time 40s and excellent film characteristics.

Hence, data showed that formula (F4) was the most suitable for development of orodispersible film of nimodipine.