



# **FORMULATION AND DEVELOPMENT OF DESMOPRESSIN ACETATE TABLETS**

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## **ABSTRACT**

Desmopressin acetate tablets were prepared with ingredients like desmopressin acetate, lactose monohydrate, starch paste, PVPK – 30, starch powder and magnesium stearate. The formulated tablets were evaluated for thickness, hardness, friability and disintegration time of marketed formulation.

**Key words :** Desmopressin acetate, Evaluation parameters.

## **INTRODUCTION**

Desmopressin acetate is a synthetic drug that mimics the action of antidiuretic hormone, arginine vasopressin. It is soluble in water, alcohol and glacial acetic acid. It binds to V2 receptors in renal collection ducts, which increases water resorption. It also stimulates release of factor VIII from endothelial cells due to stimulation of VI receptors. It has long duration of action. It is official in USP.

## **EXPERIMENTAL**

### **Materials and methods**

Desmopressin acetate was procured from Natco Pharma. Ltd. Lactose monohydrate from DMV International, PVPK – 30 from M/s B. A. S. F., starch and micro crystalline cellulose from Colorcon Asia. Magnesium stearate from DOW chemicals and pregelatinised starch from M/s. Ridhi Sidhi Chemicals.

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### Formulation of tablets

Desmopressin acetate tablets were prepared by wet granulation method. Desmopressin acetate, lactose monohydrate, starch, PVPK-30/Starch paste, magnesium stearate were weighed accurately and sieved through 40#. PVPK – 30 and desmopressin acetate was dissolved in water. Desmopressin acetate was dissolved in starch paste. Lactose monohydrate and starch were mixed and was granulated with drug binder solution. It was passed through 14# sieve and wet granules were dried in oven at 50°C. The dried granules were shifted through 20# and were lubricated with magnesium stearate. Lubricated granules were composed using 8 mm round flat punches with scroll line.

**Table 1 : Composition of desmopressin acetate formulations**

Formu. No.	DAT (mg)	Lactose monohydrate (mg)	Starch paste (%w/w)	PVPK-30 (mg)	Starch powder (mg)	Mg. stearate (mg)	Water	Total weight (mg)
F1	0.2	129.05	10	-	40	0.75	-	180
F2	0.2	131.05	8	-	40	0.75	-	180
F3	0.2	134.05	5	-	40	0.75	-	180
F4	0.2	136.05	-	3	40	0.75	Q. S.	180
F5	0.2	135.05	-	4	40	0.75	Q. S.	180
F6	0.2	134.05	-	5	40	0.75	Q. S.	180

**Table 2 : Evaluation parameters of demopressin acetate tablets**

Formula No.	Thick-ness (mm)	Hardness (kg/cm <sup>2</sup> )	Friabi-lity (%)	Disinteg-ration time (mins)	Weight variation (%)	% Drug release at the end of 45 sec
F1	1.5–1.8	6-7	0.24	120	0.177 ± 2.19	78.02
F2	1.8 - 2	5-6	0.29	110	0.181 ± 1.14	79.29
F3	2.5 - 3	4-5	0.31	90	0.178 ± 1.63	81.23
F4	-	-	-	-	-	-

Cont...

Formula No.	Thickness (mm)	Hardness (kg/cm <sup>2</sup> )	Friability (%)	Disintegration time (mins)	Weight variation (%)	% Drug release at the end of 45 sec
F5	2.8-3.0	3.6-4	0.33	60	0.179 ± 1.11	98.02
F6	2.0-2.3	5-6	0.28	100	0.181 ± 1.25	82.30
Marketed tablet	2.9-3.0	3.6-4.2	0.35	60	0.200 ± 1.25	97.98

### Evaluation of desmopressin acetate tablets

**Thickness** : Thickness was measured by Vernier calipers.

**Hardness** : Hardness was determined by using Monsanto Hardness tester.

**Friability** : Friability was observed by placing the samples in Rache Friabilator rotation at  $25 \pm 1$  rpm for 4 mins.

**Disintegration time** : The time taken for the disintegration of tablets was recorded by using I. P. disintegration apparatus.

**Weight variation** : The weight variation test was performed (20 samples). The individual weight of sample was determined and recorded. Average weight and percentage variation were recorded.

**Dissolution studies** : It was carried out by using USP dissolution apparatus type 2 (paddle) at 75 rpm, at  $35 \pm 0.5^\circ\text{C}$  in 500 mL of deaerated water at dissolution medium. 5 mL of sample was withdrawn at the end of 10, 20, 30 and 45 mins. It was suitably diluted and the drug content was estimated by HPLC method.

## RESULTS AND DISCUSSION

Desmopressin acetate tablets were prepared, evaluated and compared with that of marketed tablet using excipients, starch paste, starch powder, lactose monohydrate, PVPK – 30, magnesium stearate of different concentrations. The results are shown in Table 1. Thickness, hardness, friability, disintegration time, weight variation and % drug release were compared with of marketed product and results are given in Table 2. Formulation 4 showed capping problem and formulation 5 has been optimized as it gives better release

profile compared.

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