**ANALYTICAL METHOD VALIDATION COMMITTEE FOR NON PHARMACOPOEIAL PRODUCT**

# DEPARTMENT OF DRUG ADMINISTRATION

## Febuxostat Tablets

Febuxostat Tablets contain not less than 90 % and not more than 110 % of the stated amount of Febuxostat.

**1. Identification:**

In the assay, the principle peak in the chromatogram obtained with the sample solution should correspond to the peak in the chromatogram obtained with the reference standard solution of Febuxostat.

**2. Assay:**

**2.1 Reagents Required:**

1. Methanol (HPLC Grade)
2. Orthophosphoric acid (HPLC Grade)
3. HPLC Grade water

**2.2 Preparation of reagent solution:**

**2.2.1 Orthophosphoric acid solution:** Dilute 10 ml of the orthophosphoric acid to 1000 ml with water.

**2.2.2 Mobile phase:** Orthophosphoric acid solution: Methanol (25:75)

**2.2.3 Diluents:** Mobile phase

**2.3 Chromatographic system**

**Column:** Octyldecylsilane (C18), (150*4.6 mm), 5 µm

**Flow rate:** 1.0 ml/min

**Detector:** UV Detector

**Wavelength:** 220 nm

**Injection volume:** 20 µl

**Oven temperature:** 30 °C

**2.4 Standard Solution:**

Weigh accurately about 20 mg of working standard of febuxostat and transfer into 50 ml volumetric flask. Add about 35 ml of mobile phase and dissolve by sonicating for about 10 minutes. Allow the sample to cool to room temperature and make up the volume to 50 ml with

the mobile phase. Dilute 5 ml of the resulting solution to 50 ml with mobile phase. Filter the standard solution through 0.22 µm membrane filter.

**2.5 Sample Preparation:** Weigh individually 20 tablets & crush the tablet into fine powder. Weigh accurately the powder eq. to 20 mg of Febuxostat and transfer into 50 ml volumetric flask. Add about 35 ml of mobile phase and dissolve by sonicating for about 10 minutes. Allow the sample to cool to room temperature and make up the volume to 50 ml with the mobile phase. Filter or centrifuge the solution. Dilute 5 ml of the clear solution to 50 ml with mobile phase. Again filter the standard solution through 0.22 µm membrane filter.

**2.6 Chromatographic Procedure:**

Inject 20 µl of standard and sample solution separately and obtain the respective chromatogram. Measure the peak responses.

**2.8 Calculations:**

**Content of Febuxostat per Tablet:**

$$\frac{\textbf{Febuxostat Spl Peak Area}}{\textbf{Febuxostat Std Peak Area}} \textbf{ X } \frac{\textbf{Std wt}}{\textbf{Std Dil.}} \textbf{ X } \frac{\textbf{Spl Dil.}}{\textbf{Spl wt}} \textbf{ X Average wt X Std Potency } (\%) \textbf{X} \frac{(\textbf{100} - \textbf{Std LOD})}{\textbf{100}}$$

**3. Dissolution:**

**3.1 Dissolution Medium:** Phosphate buffer pH 6.0 (Dissolve 6.0 g of monobasic potassium phosphate in 1000 ml of water and adjust the pH to 6.0 ± 0.05 with sodium hydroxide solution.

**3.2 Dissolution test condition**

**Volume** : 900 ml

**Apparatus** : 1 (paddle)

**RPM** : 75

**Time** : 30 minutes

**3.3 Standard Solution:**

Weigh accurately about 20 mg of working standard of febuxostat and transfer into 50 ml volumetric flask. Add about 35 ml of methanol and dissolve by sonicating for few minutes. Allow the sample to cool to the room temperature and make up the volume to 50 ml with methanol. Dilute 2 ml of the standard solution to 20 ml with the dissolution medium.

**3.4 Sample Solution:**

Place the stated volume of dissolution medium, free from dissolved air, into the vessel of the apparatus. Assemble the apparatus and warm the dissolution medium to 36.5 º to 37.5 º. Operate

the apparatus immediately at the time and speed as specified in the individual monograph. Within the time interval specified, or at each of the times stated, withdraw a specimen from a zone midway between the surface of the dissolution medium and top of the rotating blade. Filter the sample solution promptly through a membrane filter of 0.2 µm. Discard the first few ml of the filtrate.

**3.5 Chromatographic condition:** Same as Assay

**3.6 Procedure:** Separately inject 20 µl of standard and sample solution and blank solution (dissolution medium) and obtain the respective chromatograms. Measure the peak responses and calculate the % release of the drug by using following formula:

**3.7 Calculation:**

$$\%\ \boldsymbol{release\ of\ Febuxostat} = \frac{\boldsymbol{Spl\ peak\ area}}{\boldsymbol{Std\ peak\ area}} \boldsymbol{X} \frac{\boldsymbol{Std\ wt}}{\boldsymbol{Std\ Dil}} \boldsymbol{X} \frac{\mathbf{900}}{\boldsymbol{Label\ Claim}} \boldsymbol{X}\ \boldsymbol{Std\ Potency}\ (\%) \boldsymbol{X} \frac{\mathbf{100} - \boldsymbol{LOD}}{\mathbf{100}} \boldsymbol{X}\ \mathbf{100}\ \%$$

**3.8 Tolerance Limit:** Not less than 70% D of the stated amount