ANALYTICAL METHOD VALIDATION COMMITTEE FOR NON PHARMACOPOEIAL PRODUCT

DEPARTMENT OF DRUG ADMINISTRATION

Ibuprofen & Paracetamol Tablets

Ibuprofen & Paracetamol Tablets contains not less than 95% and not more than 105% of the stated amount of Ibuprofen & Paracetamol.

1. Identification:

1.1 Ibuprofen:

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 Ibuprofen.

1.2 Paracetamol:

In the assay, the principle peak in the chromatogram obtained with the sample solution corresponds to the peak in the chromatogram obtained with the reference standard solution of Paracetamol.

2. Assay:

2.1 Reagents Required:

1. Methanol (HPLC Grade)
2. Acetonitrile (HPLC Grade)
3. Triethylamine (HPLC Grade)
4. Orthophosphoric acid (HPLC Grade)
5. HPLC Grade water

2.2 Preparation of reagent solution:

2.2.1 Buffer: 0.045 M Phosphoric acid solution, pH 4.0 with Triethylamine

2.2.2 Mobile phase: Buffer: Acetonitrile (30:70)

2.3 Chromatographic system

Column: Octyldecylsilane (C18), (250*4.6 mm), 5 µm

Flow rate: 1.0 ml/min

Detector: UV Detector

Wavelength: 225 nm

Injection volume: 20 µl

Oven temperature: 30 °C

2.4 Standard Solution (400 mg Ibuprofen + 500 mg Paracetamol Tablet):

Weigh accurately about 40 mg of working standard of Ibuprofen and 50 mg of working standard of paracetamol and transfer into 100 ml volumetric flask. Dissolve with methanol and make up the volume to 100 ml with methanol. Dilute 2 ml of the filtrate to 50 ml with mobile phase. Filter the resulting solution through 0.2 µm membrane filter paper.

Note: Centrifuge both the standard and sample solution at same time.

2.5 Sample Preparation: Weigh individually 20 tablets & crush the tablet into fine powder. Weigh powder eq. to 50 mg of Paracetamol and transfer into 100 ml volumetric flask. Add about 70 ml of methanol and dissolve by sonicating for about 10 minutes. Centrifuge both the standard and sample solution at same time. Dilute 2 ml of the filtrate to 50 ml with mobile phase. Again filter the resulting solution through 0.2 µm membrane filter paper.

Note: Adjust the concentration of the standard preparation and sample preparation depending upon the strength of Ibuprofen and Paracetamol Tablet.

2.6 Chromatographic Procedure:

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

2.7 Calculations:

Content of Ibuprofen and Paracetamol per Tablet:

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

3. Dissolution (Ibuprofen and Paracetamol):

3.1 Dissolution Medium: Phosphate buffer pH 7.2

3.2 Dissolution test condition

Volume : 900 ml
Apparatus : 1 (paddle)
RPM : 100
Time : 30 minutes

3.3 Standard Solution:

Weigh accurately about 40 mg of working standard of Ibuprofen and 50 mg of working standard of paracetamol and transfer into 100 ml volumetric flask. Dissolve with dissolution medium and make up the volume to 100 ml with dissolution medium. Dilute 2 ml of the filtrate to 50 ml with mobile phase. Filter the resulting solution through 0.2 µm membrane filter paper.

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. Dilute 2 ml of this solution to 50 ml with mobile phase. Again filter the resulting solution through 0.2 µm membrane filter paper.

3.5 Mobile Phase: Same as Assay

3.6 Chromatographic System: Same as Assay

3.7 Chromatographic Procedure:

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

Measure the peak responses.

3.8 Calculation:

$$\%\ release = \frac{Spl\ Peak\ Area.}{Std\ Peak\ Area}\ X\ \frac{Std\ wt}{Std\ Dil}\ X\ \frac{1000}{Label\ Claim}\ X\ \frac{100}{1}\ xStd.Potency\ (\%) X\ \frac{100 - LOD}{100}\ X\ 100\ \%$$

3.9 Tolerance: D . NLT 75 % of the stated amount (Ibuprofen)
D . NLT 80% of the stated amount (Paracetamol)