



Hetero Drugs Limited(UNIT-IV)

S.No. 599, Temple Road, Bonthapally Village, Jinnaram Mandal, Medak District, Telangana, INDIA.
Phone: +91-8458-275728/274015, Fax: +91-8458-274443

CERTIFICATE OF ANALYSIS

| | |
|----------------------------------|-------------------------------|
| Product : Amlodipine Besilate | Reference STP No. : AM-003-00 |
| Batch No. : AM0060316 | Reference : Ph.Eur. |
| Date of Manufacture : March-2016 | Batch Quantity : 200.80 Kg |
| Analytical Report No. : AM013/16 | Date of Analysis : 29/03/2016 |
| Status : Initial certification | Retest date : February-2021 |

| S.No. | Test | Specifications | Results | Reference |
|-------|----------------------------|--|---------------------|--------------------|
| 1 | Appearance | White or almost white powder | Almost white powder | Visual Inspection |
| 2 | Solubility | Slightly soluble in water and freely soluble in methanol, sparingly soluble in anhydrous ethanol, slightly soluble in 2-propanol. | Complies | Visual Inspection |
| 3 | Identification by | a) IR: The Infra Red absorption spectrum of the finely ground sample in mineral oil (liquid paraffin) dispersion should exhibit maxima only at the same wave numbers as that of a similar preparation of Amlodipine Besilate working standard. | Complies | Ph.Eur. < 2.2.24 > |
| | | b) HPLC: The retention time of the major peak in the Chromatogram of the standard solution-1 corresponds to that of the Assay preparation-1 obtained as directed in the Assay on anhydrous basis by HPLC. | Complies | Ph.Eur. < 2.2.29 > |
| 4 | Optical rotation | Should be between (-) 0.10° and (+) 0.10° | (-) 0.008° | Ph.Eur. < 2.2.7 > |
| 5 | Related Substances by HPLC | 3-ethyl 5-methyl (4RS)-4-(2-chlorophenyl)-2-[[2-(1,3-dioxo-1,3-dihydro-2H-Isoindol-2-yl)ethoxy)methyl]-6-methyl-1,4-dihydropyridine-3,5-dicarboxylate (Impurity-A) : Not more than 0.15 % | Not detected | Ph.Eur. < 2.2.29 > |
| | | 3-ethyl 5-methyl 2-[(2-aminoethoxy)methyl]-4-(2-chlorophenyl)-6-methylpyridine-3,5-dicarboxylate (Impurity-D) : Not more than 0.30 % | 0.02% | |
| | | diethyl (4RS)-2-[(2-aminoethoxy)methyl]-4-(2-chlorophenyl)-6-methyl-1,4-dihydropyridine-3,5-dicarboxylate (Impurity-E): Not more than 0.15% | Not detected | |
| | | dimethyl (4RS)-2-[(2-aminoethoxy)methyl]-4-(2-chlorophenyl)-6-methyl-1,4-dihydropyridine-3,5-dicarboxylate (Impurity-F) : Not more than 0.15 % | 0.02% | |
| | | Maximum single unknown impurity : Not more than 0.10 % | Not detected | |
| | | Total impurities : Not more than 0.80% | 0.04% | |
| 6 | Water content by KF | Not more than 0.5 % w/w | 0.17 %w/w | Ph.Eur. < 2.5.12 > |

Compiled by: *pudy*
Date: *29/04/2016*

Checked by: *RS*
Date: *29/04/2016*

Authorised signatory: *[Signature]*
Date: *29/04/2016*



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| S.No. | Test | Specifications | Results | Reference |
|-------|----------------------------------|--|--------------|--------------------------------|
| 7 | Sulphated ash | Not more than 0.2 % w/w | 0.07%w/w | Ph.Eur. < 2.4.14 > |
| 8 | Assay on anhydrous basis by HPLC | Not less than 97.0% and not more than 102.0% w/w | 99.7%w/w | Ph.Eur. < 2.2.29 > |
| * 9 | Residual solvents by GC** | Methanol : Not more than 3000 ppm | 143ppm | Ph.Eur. < 2.2.28 > In-House |
| | | Methylene chloride : Not more than 600 ppm | Not detected | |
| | | Ethyl acetate : Not more than 5000 ppm | Not detected | |

* In-House specifications

** No potential for the class-1 solvents as specified by ICH to be present in Amlodipine besilate, as they are not used in the manufacturing process. The material if tested for these solvents, will comply with the established standards.

The Product **conforms** to the above specifications

Compiled by: *padu*
Date: *29/04/2016*

Checked by: *TC*
Date: *29/04/2016*

Authorised signatory: *[Signature]*
Date: *29/04/2016*

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CERTIFICATE OF ANALYSIS

| | |
|----------------------------------|-------------------------------|
| Product : Amlodipine Besilate | Reference STP No. : AM-003-00 |
| Batch No. : AM0100416 | Reference : Ph.Eur. |
| Date of Manufacture : April-2016 | Batch Quantity : 200.50 Kg |
| Analytical Report No. : AM018/16 | Date of Analysis : 23/04/2016 |
| Status : Initial certification | Retest date : March-2021 |

| S.No. | Test | Specifications | Results | Reference |
|-------|----------------------------|--|---------------------|--------------------|
| 1 | Appearance | White or almost white powder | Almost white powder | Visual Inspection |
| 2 | Solubility | Slightly soluble in water and freely soluble in methanol, sparingly soluble in anhydrous ethanol, slightly soluble in 2-propanol. | Complies | Visual Inspection |
| 3 | Identification by | a) IR: The Infra Red absorption spectrum of the finely ground sample in mineral oil (liquid paraffin) dispersion should exhibit maxima only at the same wave numbers as that of a similar preparation of Amlodipine Besilate working standard. | Complies | Ph.Eur. < 2.2.24 > |
| | | b) HPLC: The retention time of the major peak in the Chromatogram of the standard solution-1 corresponds to that of the Assay preparation-1 obtained as directed in the Assay on anhydrous basis by HPLC. | Complies | Ph.Eur. < 2.2.29 > |
| 4 | Optical rotation | Should be between (-) 0.10° and (+) 0.10° | (+) 0.04° | Ph.Eur. < 2.2.7 > |
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| | | 3-ethyl 5-methyl 2-[(2-aminoethoxy)methyl]-4-(2-chlorophenyl)-6-methylpyridine-3,5-dicarboxylate (Impurity-D) : Not more than 0.30 % | 0.10% | |
| | | diethyl (4RS)-2-[(2-aminoethoxy)methyl]-4-(2-chlorophenyl)-6-methyl-1,4-dihydropyridine-3,5-dicarboxylate (Impurity-E): Not more than 0.15% | Not detected | |
| | | dimethyl (4RS)-2-[(2-aminoethoxy)methyl]-4-(2-chlorophenyl)-6-methyl-1,4-dihydropyridine-3,5-dicarboxylate (Impurity-F) : Not more than 0.15 % | 0.02% | |
| | | Maximum single unknown impurity : Not more than 0.10 % | Not detected | |
| | | Total impurities : Not more than 0.80% | 0.12% | |
| 6 | Water content by KF | Not more than 0.5 % w/w | 0.11 %w/w | Ph.Eur. < 2.5.12 > |

Compiled by:

Date:

paudy
29/04/2016

Checked by:

Date:

TCR
29/04/2016

Authorised signatory:

Date:

[Signature]
29/04/2016



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29/04/2016

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TCR
28/04/2016

Authorised signatory:

Date:

[Signature]
29/04/2016