江苏威凌生化科技有限公司 JIANGSU WILLING BIO-TECH CO., LTD.

Certificate of Analysis for Wilbernycin oxime (USP)

Report No: F-20170619-001

WL-QS-FP007-R02 (01)

Appearance White or almost white or light yellow, amorphous powder. powder Identification IR spectrum of sample corresponds to that of reference substance. Comply The retention time of the major peak of the Sample solution corresponds to that of the Standard solution, as obtained in the Assay. Comply Water ≤3.0% 1.4% Residue on ignition (Sum of Milbemycin A₄ oxime and Milbemycin A₃ oxime): 95.0%-102.0% on the anhydrous basis. 100.1% Ratio of Milbemycin A₄ oxime: ≥0.75 0.92 Ratio of Milbemycin A₃ oxime: ≤0.25 0.08 Impurity a: 11'- DesmethylMilbemycin A₄ oxime ≤0.7% 0.05% Impurity b: (20' R)-Hydroxymilbemycin A₄ keto form ≤0.5% 0.04% Impurity c: Milbemycin D oxime ≤3.0% 0.2% Impurity d: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 1.1% Reporting threshold: 0.10% Not detect Trichloromethane ≤600ppm Not detect N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)	Batch No: F170501 Mfg		Mfg Date: 2017.05.14	Retest Date: 2019.05.13	
Appearance White or almost white or light yellow, amorphous powder. White amorphous powder. Identification IR spectrum of sample corresponds to that of reference substance. Comply The retention time of the major peak of the Sample solution corresponds to that of the Standard solution, as obtained in the Assay. Comply Water ≪3.0% 1.4% Residue on ignition (Sum of Milbemycin A₄ oxime and Milbemycin A₃ oxime): 95.0%-102.0% on the anhydrous basis. 100.1% Ratio of Milbemycin A₄ oxime = ≥0.75 0.92 Ratio of Milbemycin A₃ oxime: ≤0.25 0.08 Impurity a: 11'- DesmethylMilbemycin A₄ oxime ≤0.7% 0.05% Impurity b: (20' R)-Hydroxymilbemycin A₄ keto form ≤0.7% 0.3% Impurity c: Milbemycin A₄ keto form ≤0.7% 0.3% Impurity d: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 1.1% Reporting threshold: 0.10% Not detect N-Heptane ≤5000ppm Not detect Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)	Report Date:	2017.06.19 Batch Size: 21.93kg Standard: WL-0		QS-FP007	
Appearance White or almost white or light yellow, amorphous powder. powder Identification IR spectrum of sample corresponds to that of reference substance. Comply Water ≤3.0% 1.4% Residue on ignition (Sum of Milbemycin A₄ oxime and Milbemycin A₃ oxime): 95.0%-102.0% on the anhydrous basis. 100.1% Ratio of Milbemycin A₄ oxime: ≥0.75 0.92 Ratio of Milbemycin A₃ oxime: ≤0.25 0.08 Impurity a: 11¹- DesmethylMilbemycin A₄ oxime ≤0.7% 0.05% Impurity b: (20' R)-Hydroxymilbemycin A₄ keto form ≤0.5% 0.04% Impurity c: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 0.3% Trichloromethane ≤60ppm Not detect N-Heptane ≤5000ppm Not detect Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)	Test Items	Specification			Result
The retention time of the major peak of the Sample solution corresponds to that of the Standard solution, as obtained in the Assay. Comply of the Standard solution, as obtained in the Assay. Water ≤3.0% 1.4% Residue on ignition 0.5% 0.2% Assay (Sum of Milbemycin A₄ oxime and Milbemycin A₃ oxime): 95.0%-102.0% on the anhydrous basis. 100.1% Ratio of Milbemycin A₄ oxime: ≥0.75 0.92 Ratio of Milbemycin A₃ oxime: ≤0.25 0.08 Impurity a: 11'- DesmethylMilbemycin A₄ oxime ≤0.7% 0.05% Impurity b: (20' R)-Hydroxymilbemycin A₄ keto form ≤0.5% 0.04% Impurity c: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 1.1% Reporting threshold: 0.10% Not detect N-Heptane ≤5000ppm Not detect Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)	Appearance	White or almost white or light yellow, amorphous powder.			White amorphous powder
$\begin{tabular}{ l l l l l l l l l l l l l l l l l l l$	Identification	IR spectrum of sample corresponds to that of reference substance.			Comply
Water ≤3.0% 1.4% Residue on ignition ≤0.5% 0.2% Assay (Sum of Milbemycin A₄ oxime and Milbemycin A₃ oxime): 95.0%-102.0% on the anhydrous basis. 100.1% Ratio of Milbemycin A₄ oxime: ≥0.75 0.92 Ratio of Milbemycin A₃ oxime: ≥0.25 0.08 Impurity a: 11¹- DesmethylMilbemycin A₄ oxime ≤0.7% 0.05% Impurity b: (20¹ R)-Hydroxymilbemycin A₄ keto form ≤0.5% 0.04% Impurity c: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 1.1% Reporting threshold: 0.10% 7richloromethane ≤60ppm Not detector N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)					Comply
Solvent residue Solvent Solve	Water	≤3.0%			1.4%
Assay (Sum of Milbemycin A₄ oxime and Milbemycin A₃ oxime): 95.0%-102.0% on the anhydrous basis. Ratio of Milbemycin A₄ oxime: ≥0.75 Ratio of Milbemycin A₃ oxime: ≤0.25 Ratio of Milbemycin A₃ oxime: ≤0.25 Impurity a: 11'- DesmethylMilbemycin A₄ oxime ≤0.7% Impurity b: (20' R)-Hydroxymilbemycin A₄ keto form ≤0.5% Impurity c: Milbemycin A₄ keto form ≤0.5% Impurity d: Milbemycin D oxime ≤3.0% Any other individual impurity ≤0.5% Total impurities (excluding impurity d) ≤3.5% Reporting threshold: 0.10% Trichloromethane ≤60ppm Not detected N-Heptane ≤5000ppm Ethanol ≤5000ppm The product complies with the specification(USP)		≤0.5%			0.2%
Ratio of Milbemycin A_4 oxime: $\geqslant 0.75$ 0.08 Ratio of Milbemycin A_3 oxime: $\geqslant 0.25$ 0.08 Impurity a: 11'- DesmethylMilbemycin A_4 oxime $\geqslant 0.7\%$ 0.05% Impurity b: (20' R)-Hydroxymilbemycin A_4 keto form $\geqslant 0.5\%$ 0.04% Impurity c: Milbemycin A_4 keto form $\geqslant 0.7\%$ 0.3% Impurity d: Milbemycin D oxime $\geqslant 3.0\%$ 0.2% Any other individual impurity $\geqslant 0.5\%$ 0.3% Total impurities (excluding impurity d) $\geqslant 3.5\%$ 1.1% Reporting threshold: 0.10% Trichloromethane $\geqslant 60$ ppm Not detected by the product complies with the specification (USP)				100.1%	
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$		Ratio of Milbemycin A₄ oxime: ≥0.75		0.92	
$ \begin{array}{l} \textbf{Organic} \\ \textbf{impurity b:} & (20^\circ R) - \textbf{Hydroxymilbemycin A}_4 \textbf{keto form} \leqslant 0.5\% & 0.04\% \\ \hline \textbf{Impurity c:} & \textbf{Milbemycin A}_4 \textbf{keto form} \leqslant 0.7\% & 0.3\% \\ \hline \textbf{Impurity d:} & \textbf{Milbemycin D oxime} \leqslant 3.0\% & 0.2\% \\ \hline \textbf{Any other individual impurity} \leqslant 0.5\% & 0.3\% \\ \hline \textbf{Total impurities} & (\textbf{excluding impurity d}) \leqslant 3.5\% & 1.1\% \\ \hline \textbf{Reporting threshold:} & 0.10\% & \\ \hline \textbf{Solvent} \\ \textbf{residue} & \hline \textbf{Trichloromethane} \leqslant 60 \text{ppm} & \textbf{Not detected} \\ \hline \textbf{N-Heptane} \leqslant 5000 \text{ppm} & \textbf{8ppm} \\ \hline \textbf{Ethanol} \leqslant 5000 \text{ppm} & \textbf{39ppm} \\ \hline \textbf{Conclusion} & \hline \textbf{The product complies with the specification(USP)} \\ \hline \end{array} $		Ratio of Milbemycin A₃ oxime: ≤0.25			0.08
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		Impurity a: 11'- DesmethylMilbemycin A₄ oxime ≤0.7%			0.05%
Organic impurities Impurity d: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 1.1% Reporting threshold: 0.10% Trichloromethane ≤60ppm Not detected N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		Impurity b: (20' R)-Hydroxymilbemycin A₄ keto form ≤0.5%		0.04%	
impurities Impurity d: Milbemycin D oxime ≤3.0% 0.2% Any other individual impurity ≤0.5% 0.3% Total impurities (excluding impurity d) ≤3.5% 1.1% Reporting threshold: 0.10% Trichloromethane ≤60ppm Not detected N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		Impurity c: Milbemycin A₄ keto form ≤0.7%		0.3%	
Any other individual impurity $\leqslant 0.5\%$ 0.3% Total impurities (excluding impurity d) $\leqslant 3.5\%$ 1.1% Reporting threshold: 0.10% Trichloromethane $\leqslant 60 \text{ppm}$ Not detected by the specification (USP) Conclusion N-Heptane $\leqslant 5000 \text{ppm}$ 39ppm The product complies with the specification (USP)		Impurity d: Milbemycin D oxime ≤3.0%		0.2%	
Reporting threshold: 0.10% Trichloromethane ≤60ppm Not detected N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		Any other individual impurity ≤0.5%		0.3%	
Solvent residue Trichloromethane ≤60ppm Not detected N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		Total impurities (excluding impurity d) ≤3.5%		1.1%	
Solvent residue N-Heptane ≤5000ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		Reporting threshold: 0.10%			
residue N-Heptane ≤5000ppm 8ppm Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		Trichloromethane ≤60ppm		Not detected	
Ethanol ≤5000ppm 39ppm Conclusion The product complies with the specification(USP)		N-Heptane ≤5000ppm		8ppm	
		Ethanol ≤5000ppm		39ppm	
Storage Preserve in tight containers, store at room temperature, protected from light.	Conclusion	The product complie	es with the specification(USP)		
	Storage	Preserve in tight containers,store at room temperature,protected from light.			

Reported by/Date: Fangingroup QC manager/Date Zhengjianhuang Reviewed by QA/Date: Lin Janchary 2017.06.19

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