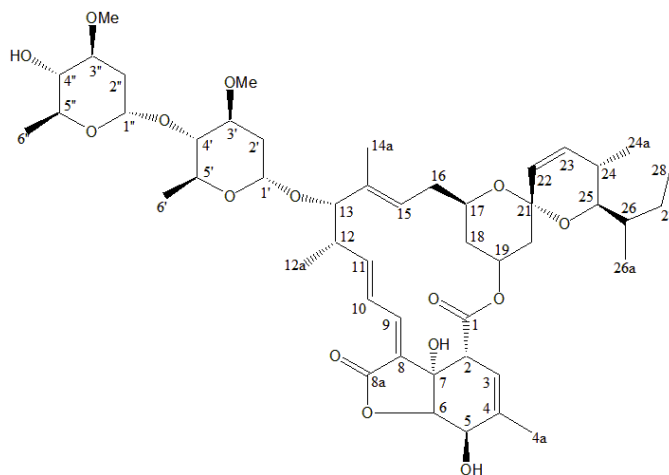


## Certificate of Analysis



PRODUCT	<b>8a-oxo-avermectin B<sub>1a</sub></b>
BATCH #	PA-038-163-301
ASSAY METHOD	HPLC, <sup>1</sup> HNMR
REPORT DATE	2019-10-03
CHEMICAL FORMULA	C <sub>48</sub> H <sub>70</sub> O <sub>15</sub>
MOLECULAR WEIGHT	887.1 g/mol
CAS REG. #	N/A
STORAGE	< -18 degrees C; dark
EXPIRATION DATE	2020-10-04
NOTES	The maximum absorbance of 8a-oxo-avermectin B <sub>1a</sub> is at 280 nm, which produces an integrated peak area of 5,444.4 mAU / mg/mL. At 245 nm, 8a-oxo-avermectin B <sub>1a</sub> produces an integrated peak area of 1,287.5 mAU / mg/mL. Non-oxidized avermectins have a maximum absorbance at 245 nm. Avermectin B <sub>1a</sub> produces an integrated peak area of 7,013 mAU / mg/mL at 245 nm. All impurities have UV characteristics similar to avermectin B <sub>1a</sub> . It was also assumed that their extinction coefficients were similar to B <sub>1a</sub> . Thus, the actual concentration of 8a-oxo-avermectin B <sub>1a</sub> at 245 nm is underrepresented by a factor of 1/0.236. The sum of the integrated impurities at 245 nm was 72.8 mAU, representing 1.0% of the 8a-oxo-avermectin B <sub>1a</sub> sample.

### Analytical Data

TEST	METHOD	SPECIFICATION	RESULT
HPLC	245 nm	> 95%	99.0%
<sup>1</sup> H-NMR		Conforms	Conforms
Appearance	White/off-white solid		

Signed: Jan Glinski, Ph.D.  
 Planta Analytica LLC  
 October 4, 2019

