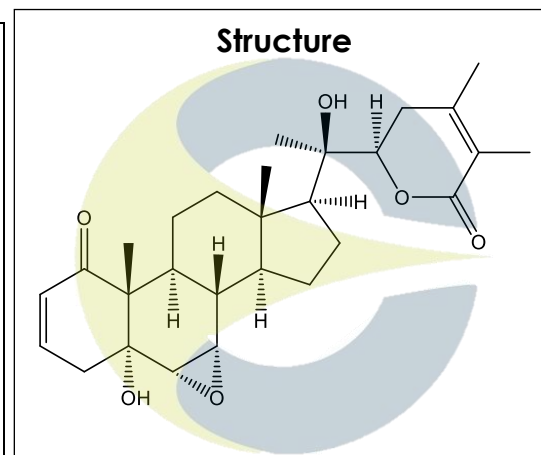


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|                       |                  |
|-----------------------|------------------|
| <b>PRODUCT NAME</b>   | Withanolide A    |
| <b>PART NUMBER</b>    | 00023251         |
| <b>STANDARD TYPE</b>  | Primary (P)      |
| <b>LOT NUMBER</b>     | 00023251-A002    |
| <b>REPORT NUMBER</b>  | CDXA-RSS-9720-00 |
| <b>SAMPLE NUMBER</b>  | CDXP-22-00210    |
| <b>DATE OF SAMPLE</b> | 03/11/2022       |
| <b>DATE OF REPORT</b> | 03/30/2022       |



|                              |                                                                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>CHEMICAL NAMES</b>        | (5 $\alpha$ ,6 $\alpha$ ,7 $\alpha$ ,22R)-6,7-Epoxy-5,20,22-trihydroxy-1-oxo-ergosta-2,24-dien-26-oic acid $\delta$ -lactone; Withanol |
| <b>CHEMICAL FORMULA</b>      | C <sub>28</sub> H <sub>38</sub> O <sub>6</sub>                                                                                         |
| <b>MOLECULAR WEIGHT (MW)</b> | 470.60                                                                                                                                 |
| <b>CHEMICAL FAMILY</b>       | Triterpenes                                                                                                                            |
| <b>CAS NUMBER</b>            | [32911-62-9]                                                                                                                           |
| <b>EC#(EINECS)</b>           | NA                                                                                                                                     |
| <b>RTECS</b>                 | NA                                                                                                                                     |

**ANALYTICAL RESULTS**

| TEST              | METHOD            | SPECIFICATION         | RESULT                                                |
|-------------------|-------------------|-----------------------|-------------------------------------------------------|
| Adjusted Purity   | NA                | ≥ 85%                 | 97.4%                                                 |
| HPLC              | 0.700.10.2.METH22 | ≥ 90%                 | 98.7%                                                 |
| NMR               | 0.700.12.4        | Conforms to structure | Conforms to structure                                 |
| Mass Spectrum     | 0.700.12.27       | Conforms              | Conforms                                              |
| Residual Solvent* | USP <467>         | NA                    | Methylene chloride:<br>10600 ppm<br>Acetone: 2390 ppm |
| Water             | 0.700.12.37       | NA                    | ND                                                    |
| Appearance        | NA                | NA                    | White powder                                          |

\*Testing performed at an ISO 17025 accredited subcontracted laboratory.

ADJUSTED PURITY: 97.4% IS BASED ON (100 - 1.3 SOLVENTS - 0.0 WATER) X 98.7% HPLC

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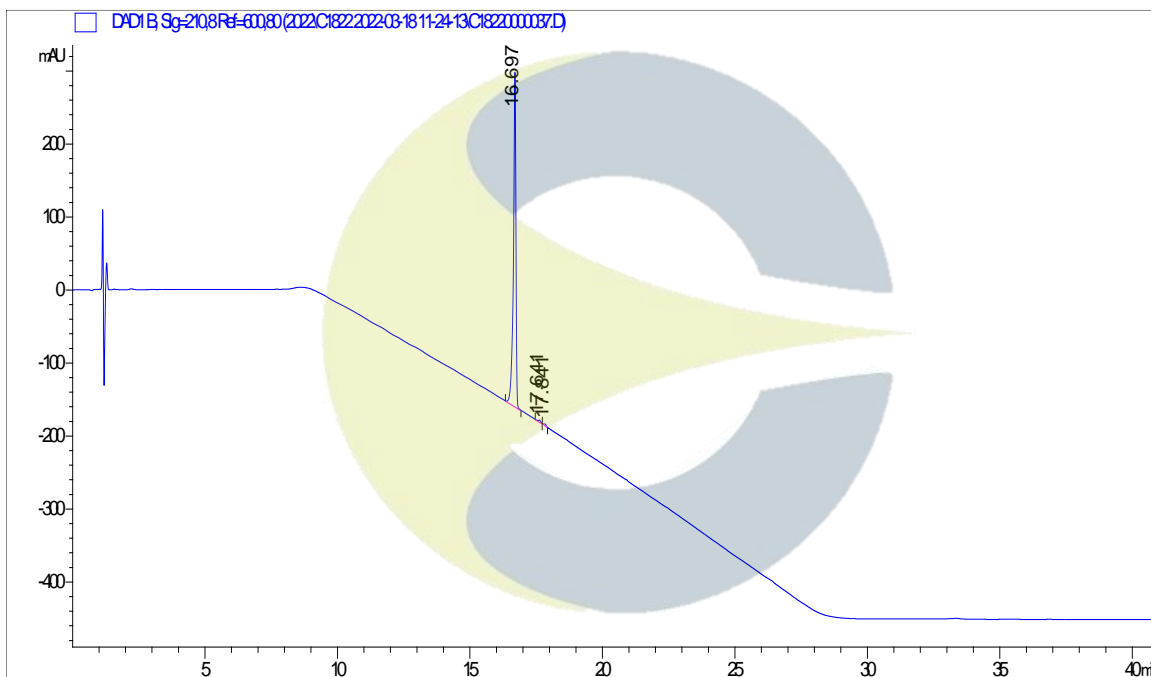
## STORAGE CONDITIONS

**STORAGE** -20 °C in a dry place.  
**EXPIRATION DATE** 03/2027 under the above conditions.

## ANALYTICAL CONDITIONS

**INSTRUMENT** AGILENT 1260 HPLC UV-VIS (DAD); AB-SCIEX 6600 TRIPLE TOF  
**COLUMN** Phenomenex Luna C18(2) 150 x 2.00 mm, 5 µm particle size  
**MOBILE PHASE** A - 0.1% Trifluoroacetic acid in Ultrapure water, B - Acetonitrile;  
 Isocratic 5% B for 5 minutes, then increasing to 95% B over 20 minutes. Hold at 95% B for 15 minutes, then decreasing to 5% B over 1 minute.  
**COLUMN TEMP.** 60 °C  
**FLOW RATE** 0.4 mL/minute  
**INJECTION VOL.** 1.0 µL  
**INJECTION CONC.** 1.0 mg/mL in Methanol  
**DETECTION** 210 ± 4 nm

## HPLC CHROMATOGRAM OF WITHANOLIDE A (CDXP-22-00210)

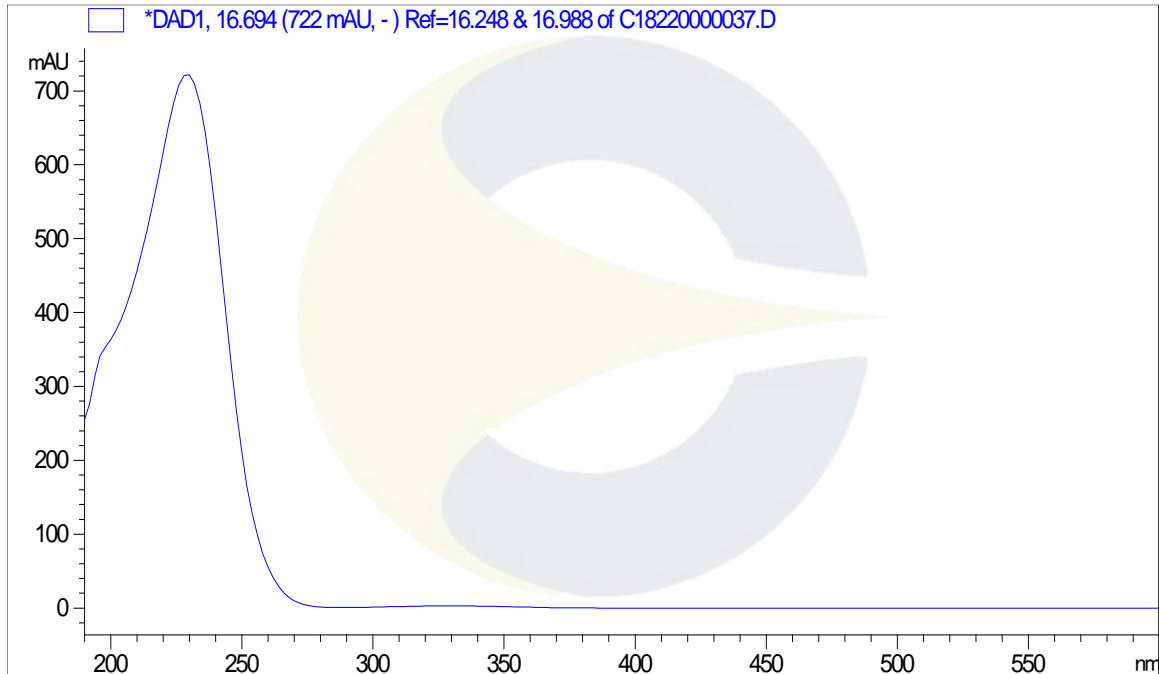


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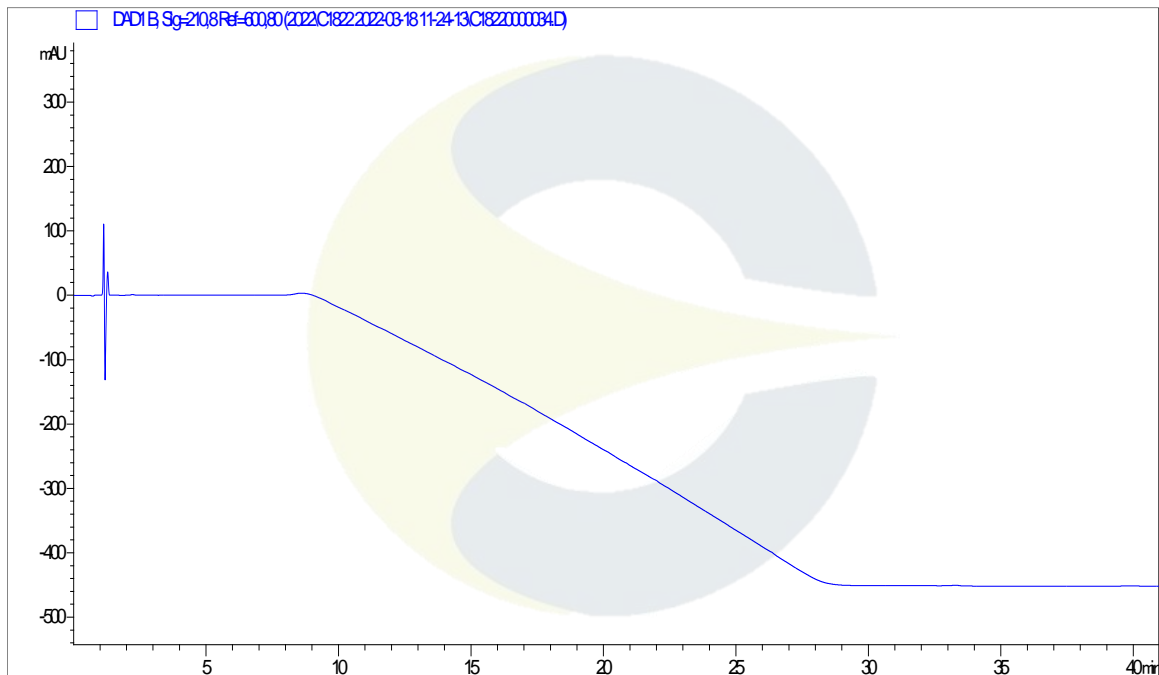
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## UV SPECTRUM AT RT = 17.0 MINUTES



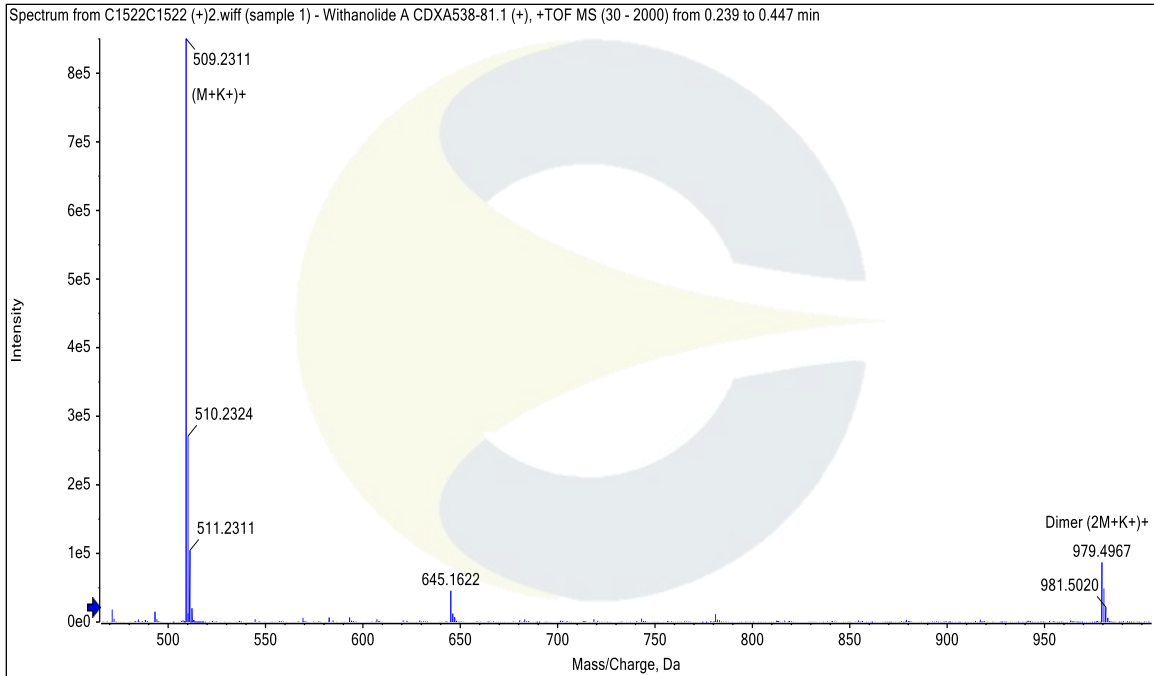
## HPLC CHROMATOGRAM OF DILUENT BLANK



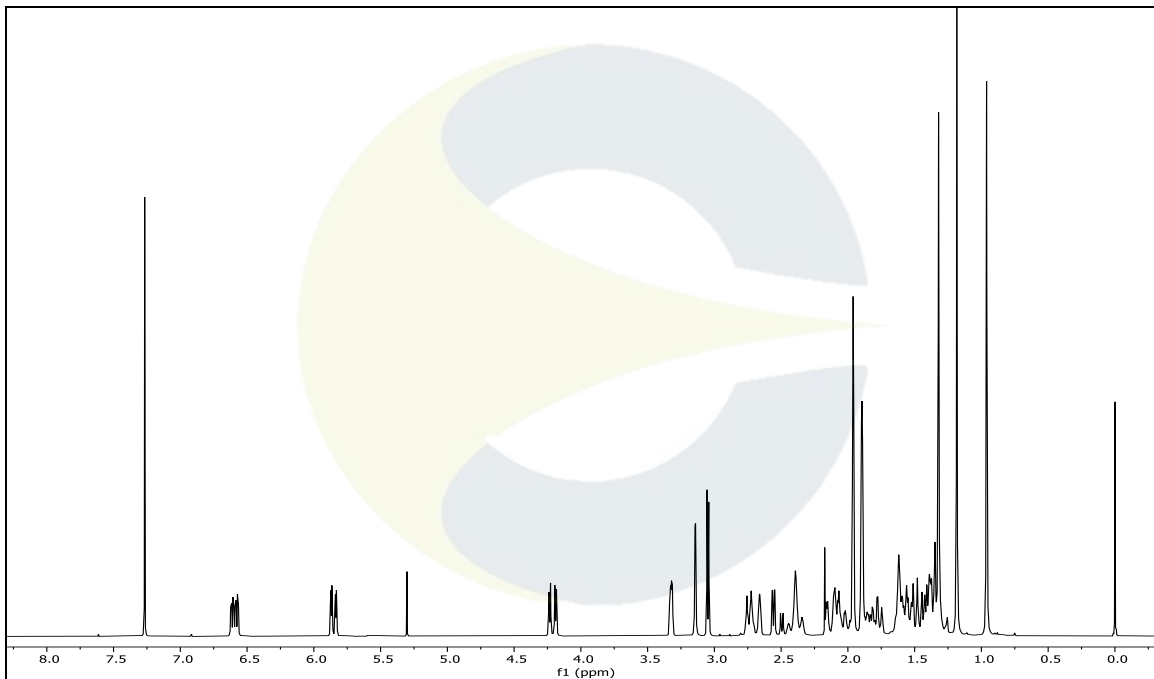
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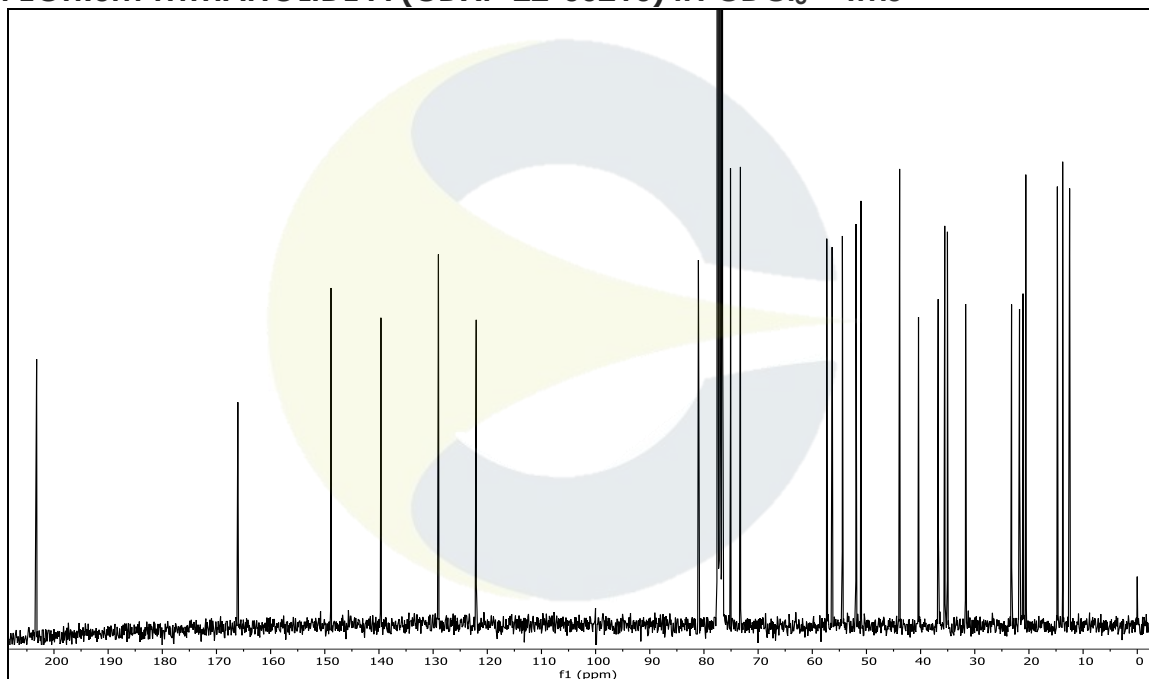
**MASS SPECTRUM OF WITHANOLIDE A (CDXP-22-00210)**



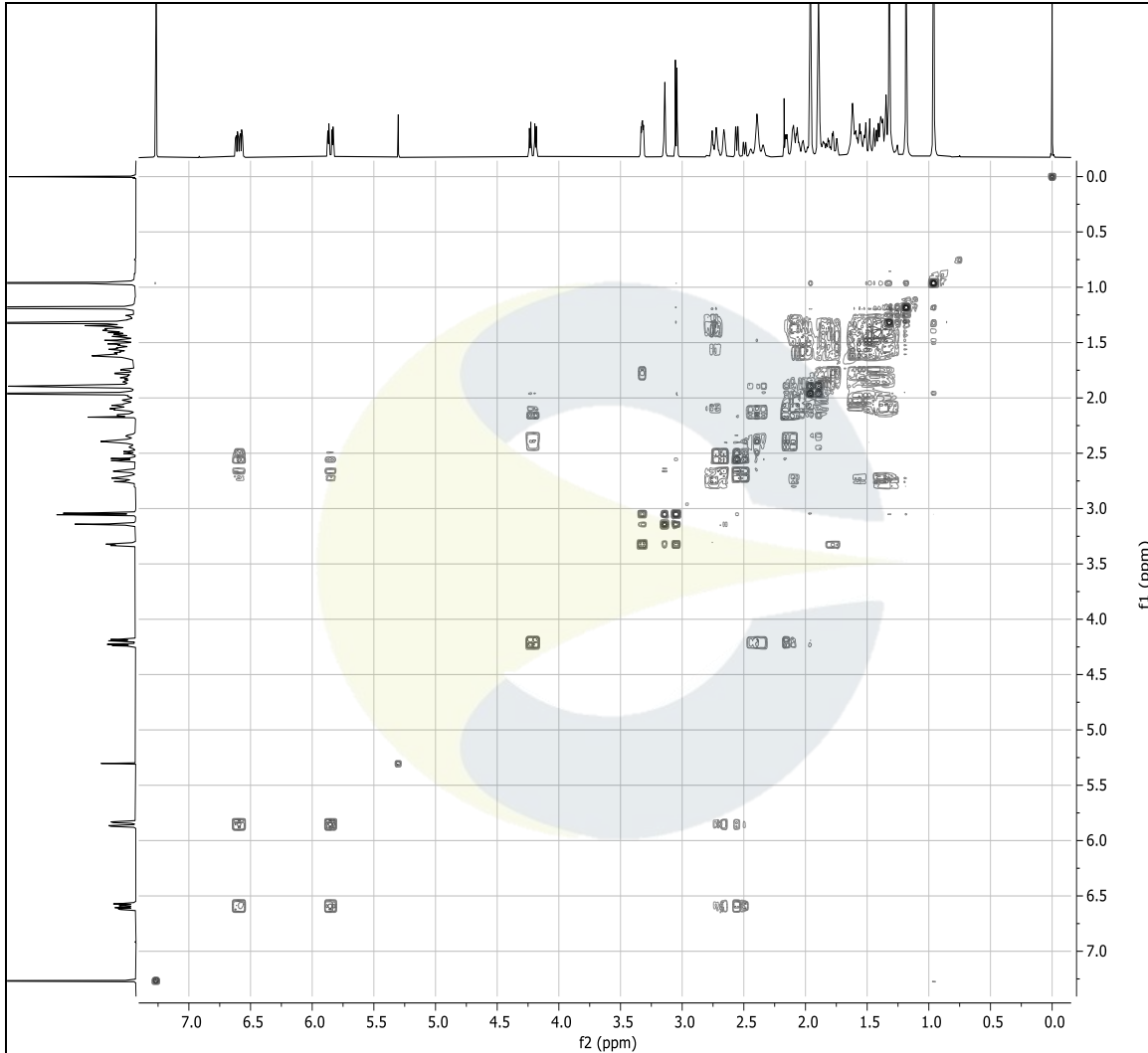
**<sup>1</sup>H-NMR SPECTRUM OF WITHANOLIDE A (CDXP-22-00210) IN CDCl<sub>3</sub> + TMS**



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**<sup>13</sup>C-NMR SPECTRUM WITHANOLIDE A (CDXP-22-00210) IN CDCl<sub>3</sub> + TMS**

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**COSY-NMR SPECTRUM OF WITHANOLIDE A (CDXP-22-00210) IN CDCl<sub>3</sub> + TMS**

**REVISION HISTORY**

| <u>Revision History</u> | <u>Date of Revision</u> | <u>Document/Changes</u> |
|-------------------------|-------------------------|-------------------------|
| 00                      | 03/30/2022              | New report              |

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