

Gojira Fine Chemicals, LLC

Quality Products & Services Meeting Customer Needs

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Certificate of Analysis

Lopinavar HPLC 98-102%

Catalog Number: LO1001 Lot Number: 0330706 **CAS Number:** 192725-17-0 **Molecular Formula:** $C_{37}H_{48}N_4O_5$ **Molecular Weight:** 628.80 $2^{\circ}C - 8^{\circ}C$ Storage:

Date of Manufacture: January 15, 2017 Retest Date: January 14, 2019

| Test | Specification | Result |
|-------------------------------|---|-----------------|
| Appearance | White powder | Conforms |
| Assay | 98.0 – 102.0% | 99.79% |
| Identification | | |
| HPLC | Retention time corresponds to reference | Conforms |
| FTIR | Spectra conforms to reference | Conforms |
| Specific Rotation (c=4, MEOH) | -22° to -26° | -24.21° |
| Solubility | DMF (~14 mg/ml), MeOH, DMSO and | For information |
| • | EtOH (126 mg/ml), water (< 1 mg/ml) | |
| Moisture | ≤ 4.0% | 3.4% |
| Residue on Ignition | ≤ 0.1% | 0.07% |
| Organic Volatile Impurities | | |
| Ethanol | ≤ 0.1% | 0.02% |
| N-Heptane | ≤ 0.05% | 0.01% |
| Related Substances | | |
| Individual Impurity | ≤ 0.1% | 0.07% |
| Total Impurities | ≤ 1.0% | 0.36% |
| Heavy Metals | ≤ 10ppm | < 10ppm |

Date: March 31, 2017

Approved by: ohn grubb

John Grubb, PhD

Gojira Fine Chemicals, LLC

Quality Manager

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