

Product Data Sheet

Product Name: CCVJ
Cat. No.: GC18179

Chemical Properties

Cas. No. 142978-18-5

Chemical Name 2-cyano-3-(2,3,6,7-tetrahydro-1H,5H-benzo[*ij*]quinolizin-9-yl)-2-propenoic acid

SMILES OC(/C(C#N)=C/C1=CC(CCC2)=C(N2CCC3)C3=C1)=O

Formula $C_{16}H_{16}N_2O_2$ M.Wt 268.3

Solubility DMF: 15 mg/ml, DMF:PBS(pH 7.2) (1:1): 0.5 mg/ml, DMSO: 10 mg/ml
Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

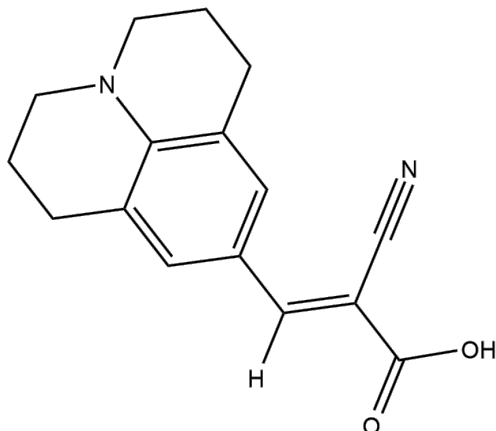
Caution: Product has not been fully validated for medical applications. For research use only.

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Structure



Protocol

Determination of α -D-1,4-Glucan Polymerization Degree by CCVJ Method

This protocol is adapted from research data and provided for reference only. Adjustments may be necessary based on specific experimental requirements.

(1) Reagent and Sample Preparation: Dissolve CCVJ in dimethyl sulfoxide (DMSO) to prepare a 1mmol/L stock solution, and store protected from light. Dilute to the working concentration (e.g., 19 μ M) using sodium phosphate buffer (5mM, pH=7.0) before use. Prepare a series of solutions or dispersions of linear α -D-1,4-glucan model molecules (MM) with different degrees of polymerization (DP). The concentration range should be 1-5g/L, covering molecular weights from 0.18kDa to 70.00kDa (corresponding to DP1 to DP450).

(2) Sample Incubation and Centrifugation: Place 1.0-5.0mg of the MM sample into a 1.5mL centrifuge tube. Add 990 μ L of sodium phosphate buffer and 10 μ L of the CCVJ stock solution to achieve a final CCVJ concentration of 19 μ M. Vortex to mix thoroughly, then incubate at 100°C for 1 hour. After

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cooling to room temperature, centrifuge at 8000g for 15 minutes. Collect the supernatant and let it stand protected from light for 1 hour before use.

(3) Fluorescence Spectrum Measurement: Transfer 150 μ L of the supernatant to a micro quartz cuvette. Use a fluorescence spectrophotometer to scan the CCVJ fluorescence spectrum with an excitation wavelength of 420nm and an emission wavelength range of 450-600nm (or monitor specifically around 491nm). Set the slit width to 10 nm and the temperature to 25°C. Record the fluorescence intensity at the maximum emission wavelength (approximately 491-494nm).

Precautions:

- (1) CCVJ is light-sensitive. All operations should be performed with protection from light. Temperature and pH conditions during incubation and measurement must be strictly controlled.
- (2) For your safety and health, please wear a lab coat and disposable gloves during operation.

References:

[1] Huang M, Guo S, Li Z, et al. Molecular rotor as an in-situ fluorescent probe for the degree of polymerization of α -D-1,4-glucans. Carbohydr Polym. 2024 Jan 15;324:121573.

Background

CCVJ is a fluorescent molecular rotor whose fluorescence intensity (excitation wavelength 420nm, emission wavelength 491nm) is inversely proportional to its intramolecular rotation rate. CCVJ can non-covalently bind to hydrophobic pockets of proteins via its large hydrophobic structure, and CCVJ fluorescence is significantly enhanced when increased viscosity inhibits intramolecular rotation. CCVJ is suitable for monitoring changes in solution or membrane viscosity, polymerization processes, and protein conformational dynamics^[1-2].

References:

- [1] Zeng Y, Cheng Y, Tang N. Rapid determination of amylopectin content in starch using molecular rotor fluorescent probes. Food Chem. 2025 Aug 15;483:144297.
- [2] Schmidt MJ, Sauter D, Rösigen T. Flow-dependent fluorescence of CCVJ. J Biol Eng. 2017 Aug 3;11:24. doi: 10.1186/s13036-017-0067-2.

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