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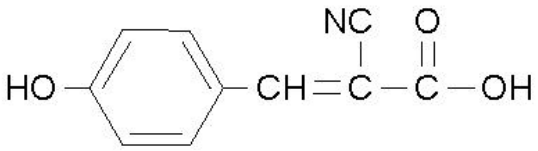
# α-Cyano-4-hydroxycinnamic Acid

Product No. **C2020**
Store at 2-8°C

CAS RN 28166-41-8
Synonyms: α-CCA; HCCA; 4-HCCA; α-CHCA; α-Cyano; ACCA

## Product Description




Appearance: Yellow powder
Molecular Formula: $C_{10}H_7NO_3$
Molecular Weight: 189.17

A specific covalent inhibitor of mitochondrial lactate and pyruvate transport.[1-4] When rat muscle was examined, tracer lactate uptake was inhibited by 5 mM α-CCA.[4] It has also been reported to inhibit beta-cell apical anion exchange ($IC_{50}$ = 2.4 mM).[5]

Cinnamic acid derivatives are commonly used in Matrix-Assisted Laser Desorption Ionization (MALDI) mass spectrometry. Of the cinnamic acid derivatives, α-cyano-4-hydroxycinnamic acid (α-CCA), sinapinic acid (3,5-dimethoxy-4-hydroxycinnamic acid, Product No. D7927), and ferulic acid (3-methoxy-4-hydroxy-cinnamic acid, Product No. F3500) are the most popular. The most important properties of MALDI matrices are absorption wavelength, solubility, and crystal formation. α-CCA absorbs well at 337 nm, the output of a nitrogen laser. It has a relatively high solubility in organic solvents and a moderate solubility in water (see Preparation Instructions), and forms fine crystals upon drying from solution.[6] In addition, α-CCA has a lower tendency to form adducts with the analyte, simplifying the mass spectra.[6] Finally, peaks arising from the matrix are not observed above a mass to charge ratio (m/z) of 400, making α-CCA particularly amenable to the analysis of low molecular weight peptides.[6]

α-CCA was introduced as a matrix for MALDI time-of-flight (TOF) mass spectrometry in 1992 and is most often used in the analysis of peptides and proteins of less than 10 kDa.[6] Recently, α-CCA was applied to the analysis of DNA by MALDI-TOF mass spectrometry[7] and the analysis of peptides and proteins in Fourier-transform mass spectrometry.[8] Antibiotics,[9] peptide nucleic acids (a new class of DNA mimics),[10] peptides[11] and proteins with masses as high as 66,000 Da have also been successfully analyzed by using this as a matrix.[8]

## Preparation Instructions

α-CCA is soluble in methanol at 50 mg/ml, in acetonitrile at ~35 mg/ml, and in water at ~6 mg/ml.

## Storage/Stability

Sigma has not tested the solution stability of this chemical.

## References

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