



**Melting Point:** Mp 190°

**Optical Rotation:**  $[\alpha]_{578}^{25} -17.1$  (c, 1.49 in H<sub>2</sub>O).  $[\alpha]_D -30$  (5M HCl)

**Fluka:** 65831

**Sigma:** M3262

>>**Variant:** (S)-form

**Synonym(s):** L-form. FEMA 3656

**CAS Registry Number:** 56-84-8

**Molecular Formula:** C<sub>4</sub>H<sub>7</sub>NO<sub>4</sub>

**Molecular Weight:** 133.104

**Accurate Mass:** 133.037509

**Percentage Composition:** C 36.10%; H 5.30%; N 10.52%; O 48.08%

**Biological Source:** Found in sugar cane and sugar beet molasses and proteins/peptides. Made comly. by biotransformation of ammonium fumarate using *Escherichia alcalescens* immobilised on polymer gel

**Use/Importance:** Glutamate receptor agonist. Dietary supplement, nutrient

**Physical Description:** Leaflets (H<sub>2</sub>O)

**Melting Point:** Mp 269-271 dec.°

**Optical Rotation:**  $[\alpha]_D^{25} +5.05$  (c, 1 in H<sub>2</sub>O).  $[\alpha]_D +25.4$  (c, 1 in 5M HCl)

**Solubility:** Spar. sol. H<sub>2</sub>O (0.5g/100g at 25°)

**pKa Value:** pK<sub>a2</sub> 3.86; pK<sub>a3</sub> 9.82-0 (25°, 1-COOH)

**Other Data:** Isoelectric point 2.77. Bitter taste

**Hazard & Toxicity:** LD<sub>50</sub> (mus, ipr) 6000 mg/kg

**Aldrich:** A9310-0

**Fluka:** 11190

**Sigma:** A4534

>>**Derivative:** 1-Me ester

**CAS Registry Number:** 17812-32-7

**Physical Description:** Cryst. (EtOH aq.)

**Melting Point:** Mp 167°

**Optical Rotation:**  $[\alpha]_D^{28} +37.6$  (c, 0.5 in H<sub>2</sub>O)

>>**Derivative:** 4-Me ester

**CAS Registry Number:** 2177-62-0

**Molecular Formula:** C<sub>5</sub>H<sub>9</sub>NO<sub>4</sub>

**Molecular Weight:** 147.13

**Accurate Mass:** 147.053159

**Percentage Composition:** C 40.82%; H 6.17%; N 9.52%; O 43.50%

**Melting Point:** Mp 181°

**Solubility:** Sol. H<sub>2</sub>O; insol. Et<sub>2</sub>O

>>**Derivative:** 4-Me ester; hydrochloride

**CAS Registry Number:** 16856-13-6

**Melting Point:** Mp 191-193°

**Optical Rotation:**  $[\alpha]_D^{25} +21.4$  (c, 1 in EtOH aq.)

**Sigma:** A8291

>>**Derivative:** Di-Me ester

**CAS Registry Number:** 6384-18-5

**Molecular Formula:** C<sub>6</sub>H<sub>11</sub>NO<sub>4</sub>

**Molecular Weight:** 161.157

**Accurate Mass:** 161.068809

**Percentage Composition:** C 44.72%; H 6.88%; N 8.69%; O 39.71%

**Boiling Point:** Bp<sub>15</sub> 119-120°