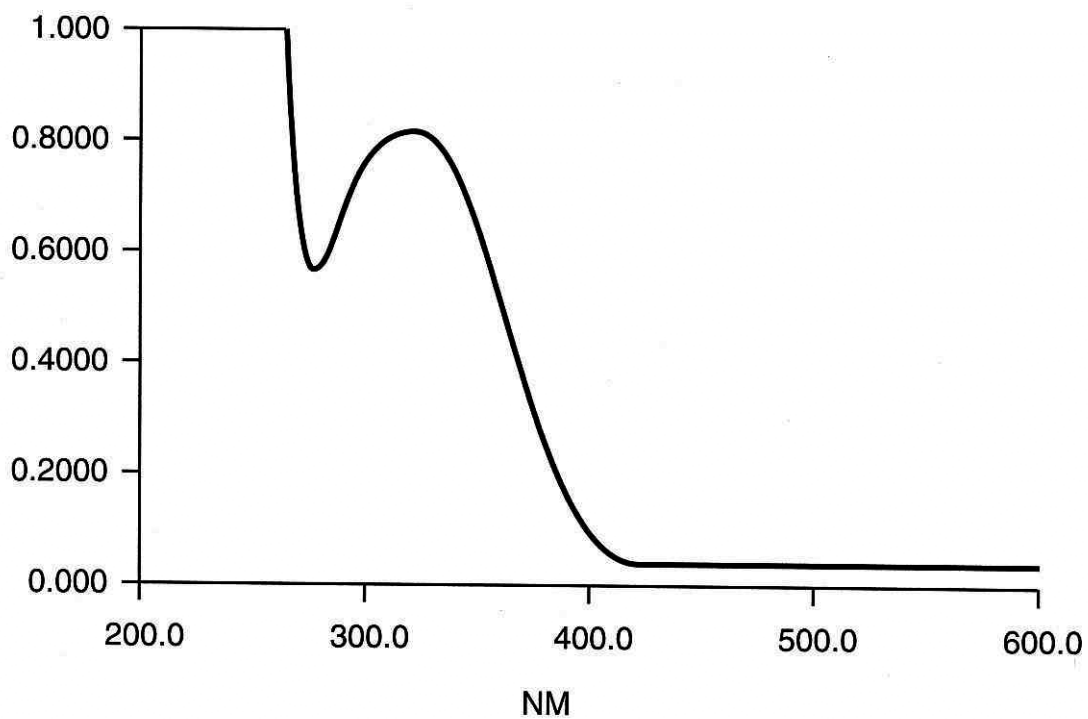


## Supplementary Information

**Synthesis of MNI-glu.** First, to a solution of 4-methoxyindole (1.0 g, 6.79 mmol) in acetic acid (15 mL), was added sodium cyanoborohydride (7.5 mL of 1 N in dichloromethane). After 18 h, the pH of the reaction mixture was adjusted to 14 and the product was extracted with dichloromethane to give pure 4-methoxyindoline (6.79 mmol).

Second, to a solution of 4-methoxyindoline (6.7 mmol), 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide (1.91 g) and dimethylaminopyridine (3.02 g) in acetonitrile (20 mL) was added and *N*-*t*-BOC-L-glutamic acid  $\alpha$ -*t*-butyl ester (2.12 g, 7.0 mmol) in acetonitrile (10 mL). After 18 h, the reaction mixture was concentrated by rotary evaporation and purified by flash chromatography on silica gel; elution with 25% ethyl acetate in hexanes gave the 1-[*S*-4-*t*-butoxycarbonyl]-4-(*t*-butoxycarbonylamino)]-butanoyl-4-methoxyindoline in 76% yield (2.32 g, 5.15 mmol).

Third, to a solution of 1-[*S*-4-*t*-butoxycarbonyl]-4-(*t*-butoxycarbonylamino)]-butanoyl-4-methoxyindoline (5.15 mmol) and silver nitrate (1.74 g, 10.3 mmol) in acetonitrile (20 mL) was added a solution of acetyl chloride (0.809 g, 10.3 mmol) in acetonitrile (5 mL). A grayish precipitate formed upon addition of the first few drops. Nitration was complete when all the chloride was added. Water was added to the reaction mixture and the product (a 3:1 mixture of the 7 and 5-nitro isomers) was extracted into dichloromethane. Flash chromatography on silica gel, elution with 40% ethyl acetate in hexanes gave a 64% yield of 1-[*S*-4-*t*-butoxycarbonyl]-4-(*t*-butoxycarbonylamino)]-butanoyl-4-methoxy-7-nitroindoline and 1-[*S*-4-*t*-butoxycarbonyl]-4-(*t*-butoxycarbonylamino)]-butanoyl-4-methoxy-5-nitroindoline in two fractions: 1.65 mmol of 80% pure 7-nitro isomer, and 1.65 mmol of a mixture of 5 and 7-nitro isomers. The former was purified by HPLC (elution with 25% ethyl acetate in hexane) to give homogeneous samples of the 7 and 5-nitro isomers. <sup>1</sup>H NMR (p.p.m., CDCl<sub>3</sub>): 7-nitro isomer, 7.75 (1 H, d, 10 Hz); 6.64 (1 H, d, 10 Hz); 5.15 (1 H, d, 8 Hz); 4.22 (2 H, t, 8 Hz); 3.91 (3 H, s); 3.08 (2 H, t, 8 Hz); 2.5-2.7 (2 H, m); 2.2-2.4 (1 H, m); 1.9-2.1 (1 H, m); 1.45 (9 H, s); 1.44 (9 H, m). 5-nitro isomer, 8.04 (1 H, d, 9 Hz); 7.87 (1 H, d, 9 Hz); 5.2 (1 H, d, 8 Hz); 4.17 (2 H, t, 8.5 Hz); 3.93 (3 H, s); 3.28 (2 H, t, 8.5 Hz); 3.5-2.7 (2 H, m); 2/3 -2.4 (1 H, m); 1.9-2.1 (1 H, m); 1.49 (9 H, s); 1.42 (9 H, s). Absorption spectrum of 7-nitro isomer (0.153 mM):



Fourth, to a solution of 1-[S-4-*t*-butoxycarbonyl]-4-(*t*-butoxycarbonylamino)]-butanoyl-4-methoxy-7-nitroindoline in dichloromethane an equal volume of trifluoroacetic acid under nitrogen at room temperature was added. After 5 h, the solvents were removed to give 1-[S-(4-amino-4-carboxybutanoyl)]-4-methoxy-7-nitroindoline. Nuclear magnetic resonance analysis of the reaction mixture showed complete hydrolysis of BOC and *t*-Bu protecting groups but no MNI hydrolysis.