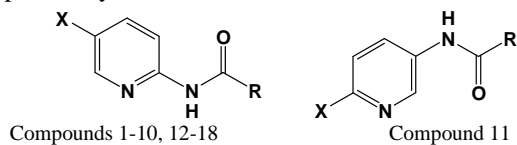


Additional file 1: Compounds synthesised



| No. | Reaction compounds | Method | X | R | Yield | $\lambda_1; \lambda_2^a$ | pK_a^b |
|-----------------|---|--------|-----------------|---|-------|--------------------------|----------|
| 1 | 2-Amino-5-chloropyridine, Methyl oxalyl chloride | D | Cl | | 39% | 254; 291 | |
| 2 | 2-Amino-5-chloropyridine, Methyl malonyl chloride | D | Cl | | 30% | 245; 287 | |
| 3 | 2-Amino-5-chloropyridine, Succinic anhydride | A | Cl | | 54% | 245; 287 | 5.4 |
| 4 | 2-Amino-5-chloropyridine, Glutaric anhydride | A | Cl | | 71% | 245; 288 | |
| 5 | 2-Amino-5-chloropyridine, Methyl adipoyl chloride | D | Cl | | 20% | 245; 288 | |
| 6 | 2-Amino-5-chloropyridine, Maleic anhydride | A | Cl | | 22% | 222; 298 | |
| 7 | 2-Amino-5-chloropyridine, Phthalic anhydride | A | Cl | | 63% | 249; 289 | |
| 8 | 2-Amino-5-chloropyridine, Methyl malonyl chloride | C | Cl | | 41% | 245; 287 | |
| 9 | 2-Amino-5-chloropyridine, Methyl succinyl chloride | C | Cl | | 33% | 245; 288 | |
| 10 | 2-Amino-5-iodopyridine, Methyl succinyl chloride | C | I | | 30% | 252; 293 | |
| 11 | 5-Amino-2-chloropyridine, Succinic anhydride | A | Cl | | 69% | 248; 284 | |
| 12 | 2-Aminopyridine, Succinic anhydride | A | H | | 74% | 235; 276 | 4.9 |
| 13 | 2-Amino-5-fluoropyridine, Succinic anhydride | A | F | | 68% | 235; 283 | |
| 14 ^c | 2-Amino-5-bromopyridine, Succinic anhydride | A | Br | | 65% | 247; 289 | 5.6 |
| 15 | 2-Amino-5-iodopyridine, Succinic anhydride | A | I | | 35% | 252; 292 | 5.8 |
| 16 | 2-Amino-5-nitropyridine, Succinic anhydride | B | NO ₂ | | 29% | 221; 350 | |
| 17 | 2-Amino-5-iodopyridine, Methyl oxalyl chloride | D | I | | 28% | 253; 293 | |
| 18 | 2-Amino-5-bromopyridine, Methyl succinyl chloride | C | Br | | 39% | 247; 289 | |

^a Absorption maxima in nm (measured in 15% ACN containing 20 mM sodium acetate buffer pH 4.8).

^b The pK_a (negative decadic logarithm of the dissociation constant) of the carboxylic acid group was determined in 50% (v/v) methanol due to limited solubility of the compounds in water.

^c Compound **14** is bikinin.