**Experimental procedures and characterization of new compounds**

**Chemistry**

Melting points were determined on a Kofler micro melting point apparatus and are uncorrected. IR spectra were recorded on an Avatar FT-IR 6700 (Thermo Scientific, UK). 1H NMR (400 MHz) and 13C NMR (100 MHz) spectra were measured on a Varian Mercury Plus spectrometer. Chemical shifts (δ) are reported in ppm downfield from TMS as internal standard and coupling constans (*J*) are given in hertz. Microanalyses were performed with a Perkin-Elmer, Model 2400 analyzer. The progress of chemical reactions was monitored by thin layer chromatography, using Macherey-Nagel plates Alugram® Sil G/UV254. Column chromatography was performed on Kieselgel 60 Merck Type 9385 (0.040-0.063). All commercial reagents were used in the highest available purity from Aldrich or Merck without further purification.

**General procedure for the synthesis of thioureas 9-11**

Crude product of (5-bromo-1-methoxyindol-3-yl)methylamine (**8**), freshly prepared by the reduction of 5-bromo-1-methoxyindole-3-carboxaldehyde oxime (**7**, 0.430 g, 1.60 mmol) with NaBH3CN (1.005 g, 16.0 mmol) in the presence of TiCl3 (30% in 2M HCl, 4.4 ml) [1], was dissolved in methanol (20 mL). Triethylamine (1.1 mL, 0.809 g, 8.0 mmol) and corresponding phenyl isothiocyanate or substituted phenyl isothiocyanate (1.6 mmol) were added and mixture was stirred for 1 h at room temperature. The residue obtained after evaporation of the solvent was dissolved in dichloromethane, small amount of silica gel was added, dichloromethane evaporated and product preabsorbed on silica gel was chromatographed on silica gel (*n*-hexane/ethyl acetate 2:1). The obtained compound was further crystallized from dichloromethane/*n*-hexane to afford pure product **9-11**.

**N-(5-Bromo-1-methoxyindol-3-yl)methyl-N****’-phenyl thiourea (9)**

Following the general procedure, product **9** was obtained using 0.216 g (0.20 mL, 1.60 mmol) of phenyl isothiocyanate and isolated on silica gel (35 g, eluent *n*-hexane/ethyl acetate 2:1).

Yield: 59% (0.368 g) after two reaction steps starting from oxime **7**; white crystals; mp 150-152 °C (dichloromethane/*n*-hexane); Rf = 0.32 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3193 (NH), 2934, 1520, 1494 cm-1.

Anal. Calcd for C17H16BrN3OS requires: C 52.31%; H 4.13%; N 10.77%; Found: C 52.59%; H 3.87%; N 11.00%.

1H NMR (400 MHz, CDCl3): δ 7.83 (bs, 1H, NH), 7.73 (d, *J* = 1.3 Hz, 1H, H-4), 7.39-7.22 (m, 6H, H-3’, H-5’, H-4’, H-2, H-6, H-7), 7.16 (d, *J* = 7.3 Hz, 2H, H-2’, H-6’), 6.12 (bs, 1H, NH), 4.91 (d, *J* = 4.8 Hz, 2H, CH2), 4.05 (s, 3H, OCH3).

13C NMR (100 MHz, CDCl3): δ 180.4 (C=S), 135.8 (C-1’), 130.9 (C-7a), 130.2 (C-3’, C-5’), 127.4 (C-4’), 125.8 (C-6), 125.2 (C-2’, C-6’), 124.4 (C-3a), 123.4 (C-2), 121.6 (C-4), 113.5 (C-5), 109.9 (C-7), 106.9 (C-3), 66.2 (OCH3), 40.9 (CH2).

**N-(5-Bromo-1-methoxyindol-3-yl)methyl-N’-(4-trifluoromethylphenyl) thiourea (10)**

Following the general procedure, product **10** was obtained using 0.325 g (1.60 mmol) of 4-trifluoromethylphenyl isothiocyanate and isolated on silica gel (25 g, eluent *n*-hexane/ethyl acetate 2:1).

Yield: 61% (0.447 g) after two reaction steps starting from oxime **7**; white crystals; mp 142-143 °C (dichloromethane/*n*-hexane); Rf = 0.42 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3204 (NH), 1537, 1328, 1110 cm-1.

Anal. Calcd for C18H15BrF3N3OS requires: C 47.17%; H 3.30%; N 9.17%; Found: C 46.85%; H 3.50%; N 8.86%.

1H NMR (400 MHz, CDCl3): δ 7.87 (bs, 1H, NH), 7.76 (d, *J* = 1.6 Hz, 1H, H-4), 7.62 (d, *J* = 8.4 Hz, 2H, H-3’, H-5’), 7.35 (dd, *J* = 8.6 Hz, *J* = 1.6 Hz, 1H, H-6), 7.33-7.28 (m, 4H, H-2, H-7, H-2’, H-6’), 6.21 (bs, 1H, NH), 4.93 (d, *J* = 4.8 Hz, 2H, CH2), 4.07 (s, 3H, OCH3).

13C NMR (100 MHz, CDCl3): δ 180.2 (C=S), 139.4 (C-1’), 130.9 (C-7a), 128.5 (q, *J* = 34.2 Hz, C-4’), 127.4 (q, *J* = 3.7 Hz, C-3’, C-5’), 126.0 (C-6), 124.4 (C-3a), 123.9 (C-2’, C-6’), 123.6 (q, *J* = 272.5 Hz, CF3), 123.5 (C-2), 121.5 (C-4), 113.6 (C-5), 110.1 (C-7), 106.4 (C-3), 66.3 (OCH3), 41.0 (CH2).

**N-(5-Bromo-1-methoxyindol-3-yl)methyl-N’-[3,5-bis(trifluoromethyl)phenyl] thiourea (11)**

Following the general procedure, product **11** was obtained using 0.434 g (0.30 mL, 1.60 mmol) of 3,5-bis(trifluoromethyl)phenyl isothiocyanateand isolated on silica gel (25 g, eluent *n*-hexane/ethyl acetate 2:1).

Yield: 66% (0.556 g) after two reaction steps starting from oxime **7**; white crystals; mp = 151-153 °C (dichloromethane/*n*-hexane); Rf = 0.44 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3190 (NH), 2940, 1560, 1284, 1129 cm-1.

Anal. Calcd for C19H14BrF6N3OS requires: C 43.36%; H 2.68%; N 7.98%; Found: C 43.58%; H 2.86%; N 7.82%.

1H NMR (400 MHz, CDCl3): δ 7.76 (d, *J* = 1.7 Hz, 1H, H-4), 7.75 (bs, 1H, NH), 7.70 (s, 2H, H-2’, H-6’), 7.66 (s, 1H, H-4’), 7.36 (dd, *J* = 8.7 Hz, *J* = 1.7 Hz, 1H, H-6), 7.34 (s, 1H, H-2), 7.31 (d, *J* = 8.7 Hz, 1H, H-7), 6.16 (bs, 1H, NH), 4.90 (d, *J* = 4.8 Hz, 2H, CH2), 4.07 (s, 3H, OCH3).

13C NMR (100 MHz, CDCl3): δ 180.4 (C=S), 138.6 (C-1’), 133.1 (q, *J* = 33.5 Hz, C-3’, C-5’), 130.9 (C-7a), 126.2 (C-6), 124.6 (C-3a), 123.9 (C-2’, C-6’), 123.4 (C-2), 123.3 (q, *J* = 272.5 Hz, 2 × CF3), 121.4 (C-4), 121.2 (C-4’), 113.8 (C-5), 110.1 (C-7), 106.0 (C-3), 66.2 (OCH3), 40.7 (CH2).

**General procedure for the synthesis of thioureas 14-17**

Crude product of [5-bromo-1-(*tert*-butoxycarbonyl)indol-3-yl]methylamine (**13**), freshly prepared by the reduction of 5-bromo-1-(*tert*-butoxycarbonyl)indole-3-carboxaldehyde oxime(**12**; 0.680 g, 2.0 mmol) with NaBH4 (0.756 g, 20 mmol) in the presence NiCl2.6H2O (0.475 g, 2 mmol) [1], was dissolved in methanol (20 mL). Triethylamine (1.40 mL, 1.012 g, 10.0 mmol) and corresponding phenyl isothiocyanate or substituted phenyl isothiocyanate (2.0 mmol) were added and mixture was stirred for 20 min. at room temperature. The residue obtained after evaporation of the solvent was dissolved in dichloromethane, small amount of silica gel was added, dichloromethane evaporated and product preabsorbed on silica gel was chromatographed on silica gel. The obtained compounds were further crystallized from dichloromethane/*n*-hexane to afford pure products **14**-**17**.

**N-[5-Bromo-1-(*tert*-butoxycarbonyl)indol-3-yl]methyl-N’-phenyl thiourea (14)**

Following the general procedure, product **14** was obtained using 0.270 g (0.24 mL, 2.0 mmol) of phenyl isothiocyanate and isolated on silica gel (50 g, eluent *n*-hexane/ethyl acetate 2:1).

Yield: 49% (0.451 g) after two reaction steps starting from oxime **12**; white crystals; mp = 180-182 °C (dichloromethane/*n*-hexane); Rf = 0.45 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3292 (NH), 3202, 3033, 2992, 1725 (C=O), 1541, 1445, 1379, 1154 cm-1.

Anal. Calcd for C21H22BrN3O2S requires: C 54.79%; H 4.82%; N 9.13%; Found: C 54.98%; H 5.09%; N 9.38%.

1H NMR (400 MHz, CDCl3): δ 7.99 (d, *J* = 8.6 Hz, 1H, H-7), 7.83 (bs, 1H, NH), 7.73 (d, *J* = 1.9 Hz, 1H, H-4), 7.53 (s, 1H, H-2), 7.41 (dd, *J* = 8.9 Hz, *J* = 1.9 Hz, 1H, H-6), 7.38 (d, *J* = 7.9 Hz, 2H, H-2’, H-6’), 7.28-7.24 (m, 1H, H-4’), 7.17 (d, *J* = 7.5 Hz, 2H, H-3’, H-5’), 6.08 (bs, 1H, NH), 4.94 (d, *J* = 4.9 Hz, 2H, CH2), 1.64 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 180.7 (C=S), 149.1 (C=O), 135.7 (C-1’), 134.4 (C-7a), 130.7 (C-3a), 130.3 (C-3’, C-5’), 127.7 (C-6), 127.6 (C-4’), 125.6 (C-2), 125.4 (C-2’, C-6’), 121.8 (C-4), 116.8 (C-7), 116.2 (C-5), 115.6 (C-3), 84.4 [C(CH3)3], 40.9 (CH2), 28.1 [C(CH3)3].

**N-[5-Bromo-1-(*tert*-butoxycarbonyl)indol-3-yl]methyl-N’-(4-fluorophenyl) thiourea (15)**

Following the general procedure, product **15** was obtained using 0.306 g (2.0 mmol) of 4-fluorophenyl isothiocyanate and isolated on silica gel (50 g, eluent *n*-hexane/acetone 2:1).

Yield: 46% (0.443 g) after two reaction steps starting from oxime **12**; white crystals; mp = 170-172 °C (dichloromethane/*n*-hexane); Rf = 0.55 (*n*-hexane/acetone 2:1).

IR νmax: 3217 (NH), 3041, 2970, 1727 (C=O), 1547, 1379, 1274, 1155, 1098 cm-1.

Anal. Calcd for C21H21BrFN3O2S requires: C 52.73%; H 4.42%; N 8.78%; Found: C 52.96%; H 4.71%; N 8.95%.

1H NMR (400 MHz, CDCl3): δ 7.99 (d, *J* = 8.9 Hz, 1H, H-7), 7.72 (bs, 1H, NH), 7.70 (d, *J* = 1.9 Hz, 1H, H-4), 7.53 (s, 1H, H-2), 7.42 (dd, *J* = 8.9 Hz, *J* = 1.9 Hz, 1H, H-6), 7.19-7.14 (m, 2H, H-2’, H-6’), 7.10-7.03 (m, 2H, H-3’, H-5’), 5.88 (bs, 1H, NH), 4.92 (d, *J* = 5.0 Hz, 2H, CH2), 1.65 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 181.2 (C=S), 161.7 (d, *J* = 249.1 Hz, C-4’), 149.1 (C=O), 134.4 (C-7a), 131.5 (C-1’), 130.7 (C-3a), 128.5 (d, *J* = 10.0 Hz, C-2’, C-6’), 127.7 (C-6), 125.6 (C-2), 121.8 (C-4), 117.3 (d, *J* = 22.7 Hz, C-3’, C-5’), 116.9 (C-7), 116.3 (C-5), 115.5 (C-3), 84.5 [C(CH3)3], 40.9 (CH2), 28.1 [C(CH3)3].

**N-[5-Bromo-1-(*tert*-butoxycarbonyl)indol-3-yl]methyl-N’-(4-trifluoromethylphenyl) thiourea (16)**

Following the general procedure, product **16** was obtained using 0.406 g (2.0 mmol) of 4-trifluoromethylphenyl isothiocyanate and isolated on silica gel (50 g, eluent *n*-hexane/ethyl acetate 4:1).

Yield: 50% (0.524 g) after two reaction steps starting from oxime **12**; white crystals; mp = 184-186 °C (dichloromethane/*n*-hexane); Rf = 0.31 (*n*-hexane/ethyl acetate 4:1).

IR νmax: 3249 (NH), 3075, 2971, 1728 (C=O), 1543, 1446, 1331, 1111 cm-1.

Anal. Calcd for C22H21BrF3N3O2S requires: C 50.01%; H 4.01%; N 7.95%; Found: C 50.24%; H 4.26%; N 8.15%.

1H NMR (400 MHz, CDCl3): δ 8.04 (bs, 1H, NH), 8.00 (d, *J* = 8.8 Hz, 1H, H-7), 7.75 (d, *J* = 1.9 Hz, 1H, H-4), 7.63 (d, *J* = 8.5 Hz, 2H, H-3’, H-5’), 7.59 (s, 1H, H-2), 7.44 (dd, *J* = 8.8 Hz, *J* = 1.9 Hz, 1H, H-6), 7.29 (d, *J* = 8.5 Hz, 2H, H-2’, H-6’), 6.22 (t, *J* = 4.5 Hz, 1H, NH), 4.95 (d, *J* = 4.5 Hz, 2H, CH2), 1.65 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 180.4 (C=S), 149.0 (C=O), 139.3 (C-1’), 134.3 (C-7a), 130.7 (C-3a), 128.7 (q, *J* = 33.3 Hz, C-4’), 127.8 (C-6), 127.4 (q, *J* = 3.8 Hz, C-3’, C-5’), 125.9 (C-2), 124.2 (C-2’, C-6’), 123.6 (q, *J* = 272.1 Hz, CF3), 121.7 (C-4), 116.9 (C-7), 116.3 (C-5), 115.1 (C-3), 84.6 [C(CH3)3], 40.9 (CH2), 28.1 [C(CH3)3].

**N-[5-Bromo-1-(*tert*-butoxycarbonyl)indol-3-yl]methyl-N’-[3,5-bis(trifluoromethyl)phenyl] thiourea (17)**

Following the general procedure, product **17** was obtained using 0.542 g (0.37 mL, 2.0 mmol) of 3,5-bis(trifluoromethyl)phenyl isothiocyanate and isolated on silica gel (50 g, eluent *n*-hexane/acetone 3:1).

Yield: 46% (0.553 g) after two reaction steps starting from oxime **12**; white crystals; mp = 101-103 °C (dichloromethane/*n*-hexane); Rf = 0.43 (*n*-hexane/acetone 3:1).

IR νmax: 3216 (NH), 1726 (C=O), 1545, 1377, 1274, 1126 cm-1.

Anal. Calcd for C23H20BrF6N3O2S requires: C 46.32%; H 3.38%; N 7.05%; Found: C 46.53%; H 3.63%; N 7.35%.

1H NMR (400 MHz, CDCl3): δ 7.99 (d, *J* = 8.8 Hz, 1H, H-7), 7.93 (bs, 1H, NH), 7.74 (s, 2H, H-2’, H-6’), 7.73 (d, *J* = 1.9 Hz 1H, H-4), 7.68 (s, 1H, H-4’), 7.60 (s, 1H, H-2), 7.44 (dd, *J* = 8.8 Hz, *J* = 1.9 Hz, 1H, H-6), 6.19 (bs, 1H, NH), 4.92 (d, *J* = 4.7 Hz, 2H, CH2), 1.65 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 180.8 (C=S), 149.1 (C=O), 138.5 (C-1’), 134.3 (C-7a), 133.1 (q, *J* = 37.3 Hz, C-3’, C-5’), 130.5 (C-3a), 127.9 (C-6), 125.9 (C-2), 123.9 (C-2’, C-6’), 123.1 (q, *J* = 272.6 Hz, 2 × CF3), 121.5 (C-4), 119.7 (C-4´), 116.9 (C-7), 116.6 (C-5), 114.8 (C-3), 84.8 [C(CH3)3], 40.6 (CH2), 28.1 [C(CH3)3].

**General procedure for synthesis of 2’-aminoanalogues of 5-bromo-1-methoxyspirobrassinin [(±)-18-(±)-20]**

To a solution of corresponding thiourea **9-11** (0.12 mmol) in AcOH (1.0 mL) and dioxane (0.5 mL), a solution of CrO3 (0.060 g, 0.60 mmol) in water (0.4 mL) was added in one portion at rt. The reaction mixture was stirred for 2.5 h at rt. The reaction mixture was diluted with Brine (20 mL) and extracted with EtOAc (2 × 20 mL). The combined organic extract was washed with 10% K2CO3 solution (2 × 20 mL) and dried over Na2SO4. The residue obtained after evaporation of the solvent was subjected to chromathography on silica gel.

**(±)-5-Bromo-1-methoxy-2’-(phenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole}-2-one [(±)-18]**

Following the general procedure, product (±)-**18** was obtained using thiourea **9** (0.047 g, 0.12 mmol) and isolated on silica gel (10 g, eluent *n*-hexane/ethyl acetate 1:1).

Yield: 61% (0.030 g); bright yellow oil; Rf = 0.62 (*n*-hexane/ethyl acetate 1:1).

IR νmax: 3294 (NH), 2925, 1721 (C=O), 1546, 1469 cm-1.

Anal. Calcd for C17H14BrN3O2S requires: C 50.50%; H 3.49%; N 10.39%; Found: C 50.79%; H 3.75%; N 10.63%.

1H NMR (400 MHz, CDCl3): δ 7.58 (d, *J* = 1.8 Hz, 1H, H-4), 7.46 (dd, *J* = 8.3 Hz, *J* = 1.8 Hz, H-6), 7.35-7.26 (m, H-2’, H-6’, H-3’, H-5’), 7.08-7.03 (m, H-4’), 6.87 (d, *J* = 8.3 Hz, 1H, H-7), 4.46 (d, *J* = 13.1 Hz, 1H, Hb), 4.22 (d, *J* = 13,1 Hz, 1H, Ha), 4.02 (s, 3H, OCH3).

13C NMR (100 MHz, CDCl3): δ 170.0 (C=O), 155.8 (C=N), 142.2 (C-1’), 137.9 (C-7a), 132.6 (C-6), 129.4 (C-3a), 129.1 (C-3’, C-5’), 127.5 (C-4), 123.8 (C-4’), 120.2 (C-2’, C-6’), 116.7 (C-5), 109.3 (C-7), 67.3 (CH2), 63.9 (OCH3), 59.9 (C-3).

**(±)-5-Bromo-1-methoxy-2’-(4-trifluoromethylphenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole}-2-one [(±)-19]**

Following the general procedure, product (±)-**19** was obtained using thiourea **10** (0.053 g, 0.12 mmol) and isolated on silica gel (5 g, eluent *n*-hexane/ethyl acetate 1:1).

Yield: 55% (0.031 g); bright yellow oil; Rf = 0.68 (*n*-hexane/ethyl acetate 1:1).

IR νmax: 3299 (NH), 2919, 1714 (C=O), 1607, 1317, 1108 cm-1.

Anal. Calcd for C18H13BrF3N3O2S requires: C 45.78%; H 2.77%; N 8.90%; Found: C 45.59%; H 2.61%; N 8.73%.

1H NMR (400 MHz, CDCl3): δ 7.59 (s, 1H, H-4), 7.52-7.43 (m, 5H, H-2’, H-6’, H-3’, H-5’, H-6), 6.89 (d, *J* = 8.1 Hz, 1H, H-7), 4.48 (d, *J* = 13.3 Hz, 1H, Hb), 4.25 (d, *J* = 13.3 Hz, 1H, Ha), 4.04 (s, 3H, OCH3).

13C NMR (100 MHz, CDCl3): δ 170.1 (C=O), 154.8 (C=N), 145.5 (C-1’), 138.1 (C-7a), 132.8 (C-6), 128.5 (C-3a), 127.5 (C-4), 126.2 (q, *J* = 3.5 Hz, C-3’, C-5’), 125.2 (q, *J* = 32.7 Hz, C-4’), 124.2 (q, *J* = 271.5 Hz, CF3), 119.4 (C-2’, C-6’), 116.8 (C-5), 109.4 (C-7), 66.8 (CH2), 64.0 (OCH3), 59.8 (C-3).

**(±)-5-Bromo-1-methoxy-2’-[3,5-bis(trifluoromethyl)phenylamino]spiro{indoline-3,5’-[4’,5’]dihydrothiazole}-2-one [(±)-20]**

Following the general procedure, product (±)-**20** was obtained using thiourea **11** (0.064 g, 0.12 mmol) and isolated on silica gel (12 g, eluent *n*-hexane/ethyl acetate 1:1).

Yield: 52% (0.034 g); bright yellow oil; Rf = 0.64 (*n*-hexane/ethyl acetate 1:1).

IR νmax: 3297 (NH), 2855, 1710 (C=O), 1277, 1129 cm-1.

Anal. Calcd for C19H12BrF6N3O2S requires: C 42.24%; H 2.24%; N 7.78%; Found: C 42.45%; H 2.46%; N 7.63%.

1H NMR (400 MHz, CDCl3): δ 7.70 (s, 2H, H-2’, H-6’), 7.62 (d, *J* = 1.8 Hz, 1H, H-4), 7.51 (dd, *J* = 8.3 Hz, *J* = 1.8 Hz, 1H, H-6), 7.42 (s, 1H, H-4’), 6.91 (d, *J* = 8.3 Hz, 1H, H-7), 4.46 (d, *J* = 13.3 Hz, 1H, Hb), 4.25 (d, *J* = 13.3 Hz, 1H, Ha), 4.05 (s, 3H, OCH3).

13C NMR (100 MHz, CDCl3): δ 170.7 (C=O), 154.7 (C=N), 144.4 (C-1’), 138.3 (C-7a), 133.1 (C-6), 131.9 (q, *J* = 33.4 Hz, C-3’, C-5’), 127.7 (C-4), 127.2 (C-3a), 123.1 (q, *J* = 272.5 Hz, 2 × CF3), 119.2 (C-2’, C-6’), 117.0 (C-5), 116.3 (q, *J* = 3.4 Hz, C-4’), 109.6 (C-7), 65.7 (CH2), 64.0 (OCH3), 59.6 (C-3).

**General procedure for the synthesis of *trans*- and *cis*-diastereoisomers of 2’-aminoanalogues of 5-bromo-1-methoxyspirobrassinol methyl ether 23a-25a and 25b-25b**

To a stirred solution of corresponding thiourea **9**-**11** (0.15 mmol) in a mixture anhydrous dichloromethane/methanol (2.7 mL/0.3 mL) at room temperature was added freshly prepared solution of bromine (0.38 mL, 0.165 mmol; the stock solution prepared by dissolving of 0.04 mL of bromine in 1.76 mL of anhydrous dichloromethane). After stirring for 10 min, triethylamine (0.033 g, 0.045 mL, 0.33 mmol) was added. After stirring for 5 min, the reaction mixture was diluted with dichloromethane (10 mL), washed with brine (2 × 20 mL) and dried over Na2SO4. The residue obtained after evaporation of the solvent was subjected to chromatography on silica gel to give products *trans-*(±)-**23a**-**25a**and *cis*-(±)-**23b**-**25b**.

***trans*-(±)-and *cis*-(±)-5-Bromo-1,2-dimethoxy-2’-(phenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-23a and (±)-23b]**.

Following the general procedure, products *trans-*(±)-**23a** and *cis*-(±)-**23b** were obtained using 0.058 g (0.15 mmol) of thiourea **9** and separated on silica gel (30 g, eluent *n*-hexane/acetone 6:1).

***trans*-(±)-23a**

Yield: 46% (0.029 g); white crystals; mp = 187-189 °C (dichloromethane/*n*-hexane), Rf = 0.22 (*n*-hexane/acetone 6:1).

IR νmax: 2839, 1640, 1584, 1494, 1347, 1040 cm-1.

Anal. Calcd for C18H18BrN3O2S requires: C 51.43%; H 4.32%; N 10.00%; Found: C 51.61%; H 4.57%; N 10.29%.

1H NMR (400 MHz, CDCl3): δ 7.45 (d, *J* = 1.8 Hz, 1H, H-4), 7.35 (dd, *J* = 8.3 Hz, *J* = 1.8 Hz, 1H, H-6), 7.32-7.21 (m, 2H, H-3’, H-5’), 7.19 (d, *J* = 7.8 Hz, 2H, H-2’, H-6’), 7.07-7.03 (m, 1H, H-4’), 6.81 (d, *J* = 8.3 Hz, 1H, H-7), 4.94 (s, 1H, H-2), 4.49 (d, *J* = 12.1 Hz, 1H, Hb), 3.92 (s, 3H, N-OCH3), 3.73 (s, 3H, C-OCH3), 3.65 (d, *J* = 12.1 Hz, 1H, Ha).

13C NMR (100 MHz, CDCl3): δ 157.3 (C=N), 147.0 (C-7a), 145.6 (C-1’), 132.7 (C-6), 130.3 (C-3a), 129.0 (C-3’, C-5’), 126.9 (C-4), 123.4 (C-4’), 120.7 (C-2’, C-6’), 115.9 (C-5), 114.4 (C-7), 108.2 (C-2), 63.8 (N-OCH3), 63.3 (C-3), 59.9 (C-OCH3), 57.9 (CH2).

***cis*-(±)-23b**

Yield: 39% (0.025 g); bright yellow oil; Rf = 0.11 (*n*-hexane/acetone 6:1).

IR νmax: 2839, 1640, 1584, 1494, 1347, 1040 cm-1.

Anal. Calcd for C18H18BrN3O2S requires: C 51.43%; H 4.32%; N 10.00%; Found: C 51.64%; H 4.59%; N 10.24%.

1H NMR (400 MHz, CDCl3): δ 7.47 (d, *J* = 1.8 Hz, 1H, H-4), 7.37 (dd, *J* = 8.4 Hz, *J* = 1.8 Hz, 1H, H-6), 7.28 (d, *J* = 4.4 Hz, 4H, H-2’, H-6’, H-3’, H-5’), 7.08-7.02 (m, 1H, H-4’), 6.82 (d, *J* = 8.4 Hz, 1H, H-7), 4.66 (s, 1H, H-2), 4.18 (d, *J* = 12.7 Hz, 1H, Ha), 4.10 (d, *J* = 12.7 Hz, 1H, Hb), 3.92 (s, 3H, N-OCH3), 3.72 (s, 3H, C-OCH3).

13C NMR (100 MHz, CDCl3): δ 158.2 (C=N), 146.5 (C-7a), 141.3 (C-1’), 132.7 (C-6), 131.4 (C-3a), 129.1 (C-3’, C-5’), 126.1 (C-4), 123.5 (C-4’), 120.3 (C-2’, C-6’), 116.1 (C-5), 114.3 (C-7), 104.6 (C-2), 66.3 (C-3), 64.3 (CH2), 63.7 (N-OCH3), 59.8 (C-OCH3).

***trans*-(±)-and *cis*-(±)-5-Bromo-1,2-dimethoxy-2’-(4-trifluoromethylphenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-24a and (±)-24b]**.

Following the general procedure, products *trans-*(±)-**24a** and *cis*-(±)-**24b** were obtained using 0.068 g (0.15 mmol) of thiourea **10** and separated on silica gel (10 g, eluent *n*-hexane/ethyl acetate 2:1).

***trans*-(±)-24a**

Yield: 30% (0.022 g); bright yellow oil; Rf = 0.43 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3400, 2848, 1599, 1319, 1104 cm-1.

Anal. Calcd for C19H17BrF3N3O2S requires: C 46.73%; H 3.51%; N 8.61%; Found: C 46.88%; H 3.73%; N 8.90%.

1H NMR (400 MHz, CDCl3): δ 7.54 (d, *J* = 8.4 Hz, 2H, H-3’, H-5’), 7.45 (d, *J* = 1.8 Hz, 1H, H-4), 7.38 (dd, *J* = 8.4 Hz, *J* = 1.8 Hz, 1H, H-6), 7.25 (d, *J* = 8.4 Hz, 2H, H-2’, H-6’), 6.83 (d, *J* = 8.4 Hz, 1H, H-7), 4.93 (s, 1H, H-2), 4.45 (d, *J* = 11.8 Hz, 1H, Hb), 3.92 (s, 3H, N-OCH3), 3.74 (s, 3H, C-OCH3), 3.62 (d, *J* = 11.8 Hz, 1H, Ha).

13C NMR (100 MHz, CDCl3): δ 158.9 (C=N), 149.6 (C-1’), 147.1 (C-7a), 132.9 (C-6), 129.6 (C-3a), 126.9 (C-4), 126.3 (q, *J* = 3.6 Hz, C-3’, C-5’), 125.3 (q, *J* = 28.8 Hz, C-4’), 122.8 (q, *J* = 272.0 Hz, CF3), 120.9 (C-2’, C-6’), 116.0 (C-5), 114.6 (C-7), 107.9 (C-2), 63.8 (N-OCH3), 62.7 (C-3), 60.0 (C-OCH3), 55.8 (CH2).

***cis*-(±)-24b**

Yield: 26% (0.019 g); bright yellow oil; Rf = 0.31 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3400, 2848, 1599, 1319, 1104 cm-1.

Anal. Calcd for C19H17BrF3N3O2S requires: C 46.73%; H 3.51%; N 8.61%; Found: C 46.95%; H 3.78%; N 8.85%.

1H NMR (400 MHz, CDCl3): δ 7.52 (d, *J* = 8.4 Hz, 2H, H-3’, H-5’), 7.47 (d, *J* = 1.8 Hz, 1H, H-4), 7.38 (dd, *J* = 8.4 Hz, *J* = 1.8 Hz, 1H, H-6), 7.34 (d, *J* = 8.4 Hz, 2H, H-2’, H-6’), 6.84 (d, *J* = 8.4 Hz, 1H, H-7), 4.66 (s, 1H, H-2), 4.15 (d, *J* = 11.8 Hz, 1H, Ha), 4.06 (d, *J* = 11.8 Hz, 1H, Hb), 3.92 (s, 3H, N-OCH3), 3.74 (s, 3H, C-OCH3).

13C NMR (100 MHz, CDCl3): δ 158.5 (C=N), 147.9 (C-1’), 146.5 (C-7a), 132.9 (C-6), 131.1 (C-3a), 126.3 (q, *J* = 3.8 Hz, C-3’, C-5’), 126.0 (C-4), 125.1 (q, *J* = 32.5 Hz, C-4’), 122.9 (q, *J* = 269.7 Hz, CF3), 120.1 (C-2’, C-6’), 116.2 (C-5), 114.4 (C-7), 104.4 (C-2), 65.7 (C-3), 63.8 (N-OCH3), 62.4 (CH2), 59.8 (C-OCH3).

***trans*-(±)-and *cis*-(±)-5-Bromo-1,2-dimethoxy-2’-[3,5-bis(trifluoromethyl)phenylamino]spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-25a and (±)-25b]**.

Following the general procedure, products *trans-*(±)-**25a** and *cis*-(±)-**25b** were obtained using 0.077 g (0.15 mmol) of thiourea **11** and separated on silica gel (20 g, eluent *n*-hexane/ethyl acetate 2:1).

***trans*-(±)-25a**

Yield: 34% (0.028 g); bright yellow oil; Rf = 0.64 (*n*-hexane/ethyl acetate 2:1).

Anal. Calcd for C20H16BrF6N3O2S requires: C 43.18%; H 2.90%; N 7.55%; Found: C 43.40%; H 3.13%; N 7.69%.

1H NMR (400 MHz, CDCl3): δ 7.53 (s, 3H, H-2’, H-6’, H-4’), 7.45 (d, *J* = 1.9 Hz, 1H, H-4), 7.39 (dd, *J* = 8.4 Hz, *J* = 1.9 Hz, 1H, H-6), 6.84 (d, *J* = 8.4 Hz, 1H, H-7), 4.94 (s, 1H, H-2), 4.37 (d, *J* = 11.3 Hz, 1H, Hb), 3.92 (s, 3H, N-OCH3), 3.75 (s, 3H, C-OCH3), 3.58 (d, *J* = 11.3 Hz, 1H, Ha).

13C NMR (100 MHz, CDCl3): δ 159.7 (C=N), 149.6 (C-1’), 147.2 (C-7a), 133.1 (C-6), 132.3 (q, *J* = 32.2 Hz, C-3’, C-5’), 129.0 (C-3a), 126.9 (C-4), 123.7 (q, *J* = 272.8 Hz, 2 × CF3), 121.4 (q, *J* = 3.5 Hz, C-2’, C-6’), 116.6 (q, *J* = 3.9 Hz, C-4’), 116.1 (C-5), 114.6 (C-7), 107.9 (C-2), 63.8 (N-OCH3), 62.2 (C-3), 60.1 (C-OCH3), 53.6 (CH2).

***cis*-(±)-25b**

Yield: 18% (0.015 g); bright yellow oil; Rf = 0.53 (*n*-hexane/ethyl acetate 2:1).

Anal. Calcd for C20H16BrF6N3O2S requires: C 43.18%; H 2.90%; N 7.55%; Found: C 43.42%; H 3.17%; N 7.72%.

1H NMR (400 MHz, CDCl3): δ 7.63 (s, 2H, H-2’, H-6’), 7.51 (s, 1H, H-4’), 7.49 (d, *J* = 1.9 Hz, 1H, H-4), 7.40 (dd, *J* = 8.4 Hz, *J* = 1.9 Hz, 1H, H-6), 6.85 (d, *J* = 8.4 Hz, 1H, H-7), 4.67 (s, 1H, H-2), 4.07 (d, *J* = 11.7 Hz, 1H, Ha), 3.99 (d, *J* = 11.7 Hz, 1H, Hb), 3.93 (s, 3H, N-OCH3), 3.74 (s, 3H, C-OCH3).

13C NMR (100 MHz, CDCl3): δ 159.4 (C=N), 148.5 (C-1’), 146.6 (C-7a), 133.1 (C-6), 132.2 (q, *J* = 35.1 Hz, C-3’, C-5’), 130.6 (C-3a), 126.0 (C-4), 123.2 (q, *J* = 272.9 Hz, 2 × CF3), 120.8 (C-2’, C-6’), 116.6 (C-4’), 116.3 (C-5), 114.6 (C-7), 104.2 (C-2), 65.0 (C-3), 63.8 (N-OCH3), 59.8 (C-OCH3), 59.7 (CH2).

**General procedure for the synthesis of *trans*- and *cis*-diastereoisomers of 2’-aminoanalogues of 5-bromo-1-Boc-spirobrassinol methyl ether 26a-29a and 26b-29b**

To a stirred solution of corresponding thiourea **14**-**17** (0.3 mmol) in a mixture anhydrous dichloromethane/methanol (5.4 mL/0.6 mL) at room temperature was added freshly prepared solution of bromine (0.77 mL, 0.33 mmol; the stock solution prepared by dissolving of 0.04 mL of bromine in 1.76 mL of anhydrous dichloromethane). After stirring for 10 min, triethylamine (0.067 g, 0.09 mL, 0.66 mmol) was added. After stirring for 5 min, the reaction mixture was diluted with dichloromethane (20 mL), washed with brine (2 × 45 mL) and dried over Na2SO4.The residue obtained after evaporation of the solvent was subjected to chromatography on silica gel to give products *trans-*(±)-**26a**-**29a**and *cis*-(±)-**26b**-**29b**.

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-methoxy-2’-(phenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-26a and (±)-26b]**.

Following the general procedure, products *trans-*(±)-**26a** and *cis*-(±)-**26b** were obtained using 0.138 g (0.3 mmol) of thiourea **14** and isolated on silica gel (20 g, eluent *n*-hexane/ethyl acetate 2:1) as a mixture of diastereoisomers.

Yield: 85% (0.122 g); colourless oil; Rf = 0.31 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3300, 2974, 2931, 1712, 1631, 1587, 1474, 1366, 1151 cm-1.

Anal. Calcd for C22H24BrN3O3S requires: C 53.88%; H 4.93%; N 8.57%; Found: C 54.12%; H 5.12%; N 8.78%.

***trans*-(±)-26a**

1H NMR (400 MHz, CDCl3): δ 7.66 (bs, 1H, H-7), 7.51 (d, *J* = 1.9 Hz, 1H, H-4), 7.37 (dd, *J* = 8.5 Hz, *J* = 1.9 Hz, 1H, H-6), 7.27 (d, *J* = 7.7 Hz, 2H, H-3’, H-5’), 7.14 (d, *J* = 7.7 Hz, 2H, H-2’, H-6’), 7.10-7.03 (m, 1H, H-4’), 5.54 (s, 1H, H-2), 4.35 (d, *J* = 12.2 Hz, 1H, Hb), 4.05 (d, *J* = 12.2 Hz, 1H, Ha), 3.55 (s, 3H, OCH3), 1.57 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 158.9 (C=N), 151.8 (C=O), 146.2 (C-1’), 141.3 (C-7a), 132.7 (C-6), 132.3 (C-3a), 129.1 (C-3’, C-5’), 126.6 (C-4), 123.7 (C-4’), 120.9 (C-2’, C-6’), 117.4 (C-5), 115.9 (C-7), 98.5 (C-2), 82.7 [C(CH3)3], 64.5 (C-3), 58.3 (OCH3), 54.1 (CH2), 28.3 [C(CH3)3].

***cis*-(±)-26b**

1H NMR (400 MHz, CDCl3): δ 7.66 (bs, 1H, H-7), 7.52 (d, *J* = 2.3 Hz, 1H, H-4), 7.37 (dd, *J* = 8.5 Hz, *J* = 1.9 Hz, 1H, H-6), 7.27 (d, *J* = 7.7 Hz, 2H, H-3’, H-5’), 7.14 (d, *J* = 7.7 Hz, 2H, H-2’, H-6’), 7.10-7.03 (m, 1H, H-4’), 5.27 (s, 1H, H-2), 3.96 (d, *J* = 12.1 Hz, 1H, Hb), 3.66 (d, *J* = 12.1 Hz, 1H, Ha), 3.54 (s, 3H, OCH3), 1.59 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.6 (C=N), 151.8 (C=O), 146.2 (C-1’), 141.3 (C-7a), 132.4 (C-6), 132.3 (C-3a), 129.2 (C-3’, C-5’), 126.6 (C-4), 123.7 (C-4’), 120.6 (C-2’, C-6’), 117.1 (C-5), 115.9 (C-7), 95.5 (C-2), 82.7 [C(CH3)3], 64.5 (C-3), 58.3 (OCH3), 54.1 (CH2), 28.3 [C(CH3)3].

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-methoxy-2’-(4-fluorophenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-27a and (±)-27b]**.

Following the general procedure, products *trans-*(±)-**27a** and *cis*-(±)-**27b** were obtained using 0.142 g (0.3 mmol) of thiourea **15** and isolated on silica gel (25 g, eluent *n*-hexane/ethyl acetate 2:1) as a mixture of diastereoisomers.

Yield: 68% (0.104 g); colourless oil; Rf = 0.31 (*n*-hexane/ethyl acetate 2:1).

IR νmax: 3312, 2856, 1717, 1625, 1503, 1476, 1365, 1150 cm-1.

Anal. Calcd for C22H23BrFN3O3S requires: C 51.97%; H 4.56%; N 8.27%; Found: C 52.11%; H 4.73%; N 8.44%.

***trans*-(±)-27a**

1H NMR (400 MHz, CDCl3): δ 7.67 (bs, 1H, H-7), 7.50 (d, *J* = 1.9 Hz, 1H, H-4), 7.37 (dd, *J* = 8.5 Hz, *J* = 1.9 Hz, 1H, H-6), 7.07-7.03 (m, 2H, H-3’, H-5’), 6.99-6.94 (m, 2H, H-2’, H-6’), 5.54 (s, 1H, H-2), 4.31 (d, *J* = 11.8 Hz, 1H, Hb), 4.01 (d, *J* = 11.8 Hz, 1H, Ha), 3.55 (s, 3H, OCH3), 1.57 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.4 (d, *J* = 242.6 Hz, C-4’), 159.3 (C=N), 152.1 (C=O), 143.1 (C-1’), 140.3 (C-7a), 132.7 (C-6), 132.5 (C-3a), 126.5 (C-4), 122.5 (d, *J* = 7.8 Hz, C-3’, C-5’), 116.0 (C-5), 115.7 (C-7), 115.5 (C-2’, C-6’), 98.5 (C-2), 82.7 [C(CH3)3], 64.5 (C-3), 58.3 (OCH3), 52.9 (CH2), 28.3 [C(CH3)3].

***cis*-(±)-27b**

1H NMR (400 MHz, CDCl3): δ 7.67 (bs, 1H, H-7), 7.50 (d, *J* = 1.9 Hz, 1H, H-4), 7.37 (dd, *J* = 8.5 Hz, *J* = 1.9 Hz, 1H, H-6), 7.20-7.17 (m, 2H, H-3’, H-5’), 6.99-6.94 (m, 2H, H-2’, H-6’), 5.27 (s, 1H, H-2), 3.90 (d, *J* = 11.6 Hz, 1H, Hb), 3.61 (d, *J* = 11.6 Hz, 1H, Ha), 3.53 (s, 3H, OCH3), 1.59 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.4 (d, *J* = 242.6 Hz, C-4’), 160.1 (C=N), 152.1 (C=O), 143.1 (C-1’), 140.3 (C-7a), 132.7 (C-6), 132.5 (C-3a), 126.5 (C-4), 122.3 (d, *J* = 8.2 Hz, C-3’, C-5’), 115.9 (C-5), 115.7 (C-7), 115.6 (C-2’, C-6’), 95.3 (C-2), 82.7 [C(CH3)3], 64.5 (C-3), 58.3 (OCH3), 52.9 (CH2), 28.3 [C(CH3)3].

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-methoxy-2’-(4-trifluoromethylphenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-28a and (±)-28b]**.

Following the general procedure, products *trans-*(±)-**28a** and *cis*-(±)-**28b** were obtained using 0.158 g (0.3 mmol) of thiourea **16** and isolated on silica gel (25 g, eluent *n*-hexane/acetone 2:1) as a mixture of diastereoisomers.

Yield: 75% (0.126 g); colourless oil; Rf = 0.46 (*n*-hexane/acetone 2:1).

IR νmax: 3300, 2977, 1712, 1639, 1599, 1473, 1368, 1319, 1156, 1063 cm-1.

Anal. Calcd for C23H23BrF3N3O3S requires: C 49.47%; H 4.15%; N 7.52%; Found: C 49.70%; H 4.34%; N 7.66%.

***trans*-(±)-28a**

1H NMR (400 MHz, CDCl3): δ 7.71 (bs, 1H, H-7), 7.53-7.51 (m, 3H, H-4, H-3’, H-5’), 7.38 (dd, *J* = 8.5 Hz, *J* = 1.9 Hz, 1H, H-6), 7.21 (d, *J* = 8.1 Hz, 2H, H-2’, H-6’), 5.58 (s, 1H, H-2), 4.35 (d, *J* = 12.0 Hz, 1H, Hb), 4.04 (d, *J* = 12.0 Hz, 1H, Ha), 3.55 (s, 3H, OCH3), 1.58 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.0 (C=N), 151.9 (C=O), 149.9 (C-1’), 139.9 (C-7a), 132.8 (C-6), 132.6 (C-3a), 126.5 (C-4), 126.3 (q, *J* = 3.7 Hz, C-3’, C-5’), 125.4 (q, *J* = 32.7 Hz, H-4’), 124.3 (q, *J* = 270.5 Hz, CF3), 120.9 (C-2’, C-6’), 117.6 (C-5), 116.0 (C-7), 98.3 (C-2), 82.9 [C(CH3)3], 64.7 (C-3), 58.3 (OCH3), 53.2 (CH2), 28.3 [C(CH3)3].

***cis*-(±)-28b**

1H NMR (400 MHz, CDCl3): δ 7.71 (bs, 1H, H-7), 7.57 (d, *J* = 8.5 Hz, 2H, H-3’, H-5’), 7.53-7.51 (m, H-4), 7.38 (dd, *J* = 8.5 Hz, *J* = 1.9 Hz, 1H, H-6), 7.33 (d, *J* = 8.1 Hz, 2H, H-2’, H-6’), 5.29 (s, 1H, H-2), 3.98 (d, *J* = 11.8 Hz, 1H, Hb), 3.64 (d, *J* = 11.8 Hz, 1H, Ha), 3.54 (s, 3H, OCH3), 1.59 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.0 (C=N), 151.9 (C=O), 149.9 (C-1’), 139.9 (C-7a), 132.8 (C-6), 132.6 (C-3a), 126.5 (C-4), 126.4 (q, *J* = 3.7 Hz, C-3’, C-5’), 125.4 (q, *J* = 32.7 Hz, H-4’), 124.3 (q, *J* = 270.5 Hz, CF3), 120.6 (C-2’, C-6’), 117.2 (C-5), 115.9 (C-7), 95.3 (C-2), 82.9 [C(CH3)3], 64.7 (C-3), 58.3 (OCH3), 53.2 (CH2), 28.3 [C(CH3)3].

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-methoxy-2’-[3,5-bis(trifluoromethyl)phenylamino]spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-29a and (±)-29b]**.

Following the general procedure, products *trans-*(±)-**29a** and *cis*-(±)-**29b** were obtained using 0.179 g (0.3 mmol) of thiourea **17** and isolated on silica gel (15 g, eluent *n*-hexane/acetone 3:1) as a mixture of diastereoisomers.

Yield: 78% (0.146 g); colourless oil; Rf = 0.49 (*n*-hexane/acetone 3:1).

IR νmax: 3300, 2978, 1713, 1637, 1600, 1473, 1370, 1275,1127 cm-1.

Anal. Calcd for C24H22BrF6N3O3S requires: C 46.02%; H 3.54%; N 6.71%; Found: C 46.13%; H 3.75%; N 6.87%.

***trans*-(±)-29a**

1H NMR (400 MHz, CDCl3): δ 7.63 (s,1H, H-7), 7.52-7.48 (m, 4H, H-4, H-4’, H-2’, H-6’), 7.41 (dd, *J* = 8.5 Hz, *J* = 1.6 Hz, 1H, H-6), 5.58 (s, H-2), 4.31 (d, *J* = 11.5 Hz, 1H, Hb), 4.02 (d, *J* = 11.5 Hz, 1H, Ha), 3.56 (s, 3H, OCH3), 1.58 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 160.3 (C=N), 151.9 (C=O), 149.6 (C-1’), 140.5 (C-7a), 133.1 (C-6), 132.3 (q, *J* = 33.2 Hz, C-3’, C-5’), 131.8 (C-3a), 126.6 (C-4), 123.2 (q, *J* = 272.6 Hz, 2 × CF3), 121.5 (C-2’, C-6’), 117.7 (C-5), 116.7 (C-4’), 116.1 (C-7), 96.2 (C-2), 83.0 [C(CH3)3], 64.3 (C-3), 58.2 (OCH3), 50.8 (CH2), 28.2 [C(CH3)3].

***cis*-(±)-29b**

1H NMR (400 MHz, CDCl3): δ 7.63 (s,3H, H-7, H-2’, H-6’), 7.56 (s, 1H, H-4’), 7.52-7.48 (m, 1H, H-4), 7.41 (dd, *J* = 8.5 Hz, *J* = 1.6 Hz, 1H, H-6), 5.29 (s, H-2), 3.87 (d, *J* = 11.5 Hz, 1H, Hb), 3.61 (d, *J* = 11.5 Hz, 1H, Ha), 3.55 (s, 3H, OCH3), 1.59 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 160.8 (C=N), 151.9 (C=O), 149.6 (C-1’), 140.5 (C-7a), 133.1 (C-6), 132.7 (q, *J* = 28.5 Hz, C-3’, C-5’), 131.8 (C-3a), 126.6 (C-4), 123.2 (q, *J* = 272.6 Hz, 2 × CF3), 121.1 (C-2’, C-6’), 117.7 (C-5), 117.2 (C-4’), 116.0 (C-7), 95.1 (C-2), 83.0 [C(CH3)3], 64.3 (C-3), 58.2 (OCH3), 50.8 (CH2), 28.3 [C(CH3)3].

**General procedure for the synthesis of 2-aminoanalogues of 6-bromocyclobrassinin 30-33**

To a stirred solution of corresponding thiourea **14**-**17** (0.2 mmol) in a mixture anhydrous dichloromethane/methanol (3.6 mL/0.4 mL) at room temperature was added freshly prepared solution of bromine (0.51 mL, 0.22 mmol; the stock solution prepared by dissolving of 0.04 mL of bromine in 1.76 mL of anhydrous dichloromethane). After stirring for 10 min, triethylamine (0.045 g, 0.06 mL, 0.44 mmol) was added. After stirring for 5 min, the reaction mixture was diluted with dichloromethane (15 mL), washed with brine (2 × 30 mL) and dried over Na2SO4. The crude spiroproduct **26**-**29** (0.20 mmol), obtained after evaporation of the solvent was dissolved in dry dichlomethane (1 mL). Trifluoroacetic acid (0.30 mL, 0.456 g, 4.0 mmol), was added and mixture was stirred for 1.5 h at room temperature. The reaction mixture was poured into solution of NaHCO3 (0.480 g, 5.7 mmol in 1.9 mL of water) cooled at 0 °C. Reaction mixture was diluted with dichloromethane (10 mL), the organic layer was removed and the aqueous layer was extracted with dichloromethane (10 mL). The organic layer was dried over anhydrous Na2SO4. The residue obtained after evaporation of the solvent was further crystallized to afford pure products **30**-**33**.

**6-Bromo-2-(phenylamino)-4*H*-1,3-thiazino[6,5-*b*]indole (30)**

Following the general procedure, product **30** was obtained using 0.092 g (0.20 mmol) of thiourea **14**.

Yield: 63% (0.045 g); orange crystals; mp = 155-157 °C (dichloromethane/*n*-hexane); Rf = 0.41 (*n*-hexane/acetone 2:1).

IR νmax: 3380 (NH), 3014, 2836, 1587, 1444, 1188 cm-1.

Anal. Calcd for C16H12BrN3S requires: C 53.64%; H 3.38%; N 11.73%; Found: C 53.87%; H 3.65%; N 11.98%.

1H NMR (400 MHz, DMSO-d6): δ 11.62 (bs, 1H, NH), 9.09 (bs, 1H, NH), 7.66 (d, *J* = 1.9 Hz, 1H, H-5), 7.60 (bs, 2H, H-2’, H-6’), 7.28 (d, *J* = 8.6 Hz, 1H, H-8), 7.26-7.24 (m, 2H, H-3’, H-5’), 7.15 (dd, *J* = 8.6 Hz, *J* = 1.9 Hz, 1H, H-7), 7.03-6.99 (m, 1H, H-4’), 4.85 (s, 2H, CH2).

13C NMR (100 MHz, DMSO-d6): δ 139.0 (C=N), 135.3 (C-8a), 129.1 (C-1´), 129.0 (C-3’, C-5’), 126.9 (C-4b), 126.2 (C-9a), 123.6 (C-7), 122.9 (C-4’), 119.7 (C-5), 115.3 (C-2’, C-6’), 113.1 (C-8), 112.5 (C-6), 112.3 (C-4a), 44.2 (CH2).

**6-Bromo-2-(4-fluorophenylamino)-4*H*-1,3-thiazino[6,5-*b*]indole (31)**

Following the general procedure, product **31** was obtained using 0.098 g (0.20 mmol) of thiourea **15**.

Yield: 49% (0.037 g); orange crystals; mp = 130-132 °C (acetone/*n*-hexane); Rf = 0.6 (*n*-hexane/ethyl acetate 1:1).

IR νmax: 3365 (NH), 3102, 2834, 1590, 1498, 1177 cm-1.

Anal. Calcd for C16H11BrFN3S requires: C 51.08%; H 2.95%; N 11.17%; Found: C 51.35%; H 3.23%; N 11.39%.

1H NMR (400 MHz, DMSO-d6): δ 11.63 (bs, 1H, NH), 9.15 (bs, 1H, NH), 7.66 (m, 3H, H-5, H-2’, H-6’), 7.28 (d, *J* = 8.6 Hz, 1H, H-8), 7.15 (dd, *J* = 8.6 Hz, *J* = 1.9 Hz, 1H, H-7), 7.08 (t, *J* = 8.9 Hz, 2H, H-3’, H-5’), 4.85 (s, 2H, CH2).

13C NMR (100 MHz, DMSO-d6): δ 156.6 (d, *J* = 232.8 Hz, C-4’), 143.9 (C=N), 135.3 (C-8a), 134.4 (C-1´), 126.9 (C-4b), 126.8 (C-9a), 126.0 (C-2’, C-6’), 123.0 (C-7), 119.7 (C-5), 115.5 (d, *J* = 21.8 Hz, C-3’, C-5’), 113.1 (C-8), 112.3 (C-6), 100.5 (C-4a), 44.8 (CH2).

**6-Bromo-2-(4-trifluoromethylphenylamino)-4*H*-1,3-thiazino[6,5-*b*]indole (32)**

Following the general procedure, product **32** was obtained using 0.106 g (0.20 mmol) of thiourea **16**.

Yield: 48% (0.041 g); orange crystals; mp = 151-153 °C (acetone/*n*-hexane); Rf = 0.29 (*n*-hexane/acetone 2:1).

IR νmax: 3395 (NH), 3125, 1606, 1519, 1499, 1322, 1109 cm-1.

Anal. Calcd for C17H11BrF3N3S requires: C 47.90%; H 2.60%; N 9.86%; Found: C 48.19%; H 2.78%; N 10.08%.

1H NMR (400 MHz, DMSO-d6): 11.67 (bs, 1H, NH), 9.55 (bs, 1H, NH), 7.86 (bs, 2H, H-2’, H-6’), 7.69 (d, *J* = 1.9 Hz, 1H, H-5), 7.60 (d, *J* = 8.7 Hz, 2H, H-3’, H-5’), 7.29 (d, *J* = 8.6 Hz, 1H, H-8), 7.17 (dd, *J* = 8.6 Hz, *J* = 1.9 Hz, 1H, H-7), 4.94 (s, 2H, CH2).

13C NMR (100 MHz, DMSO-d6): δ 144.7 (C-1´), 143.3 (C=N), 135.4 (C-8a), 127.6 (q, *J* = 3.8 Hz, C-3’, C-5’), 126.8 (C-4b), 126.4 (q, *J* = 33.3 Hz, C-4’), 125.6 (C-9a), 124.7 (q, *J* = 271.3 Hz, CF3), 123.7 (C-7), 119.8 (C-5), 115.8 (C-2’, C-6’), 113.1 (C-8), 112.3 (C-6), 111.7 (C-4a), 48.6 (CH2).

**6-Bromo-2-[3,5-bis(trifluoromethyl)phenylamino]-4*H*-1,3-thiazino[6,5-*b*]indole (33)**

Following the general procedure, product **33** was obtained using 0.120 g (0.20 mmol) of thiourea **17**.

Yield: 49% (0.049 g); orange crystals; mp = 143-145 °C (dichloromethane/*n*-hexane); Rf = 0.33 (*n*-hexane/acetone 2:1).

IR νmax: 3388 (NH), 3025, 1604, 1530, 1469, 1378, 1275, 1120 cm-1.

Anal. Calcd for C18H10BrF6N3S requires: C 43.74%; H 2.04%; N 8.50%; Found: C 43.97%; H 2.34%; N 8.79%.

1H NMR (400 MHz, DMSO-d6): 11.68 (bs, 1H, NH), 9.88 (bs, 1H, NH), 8.35 (bs, 2H, H-2’, H-6’), 7.69 (d, *J* = 1.8 Hz, 1H, H-5), 7.71 (bs, 1H, H-4’), 7.29 (d, *J* = 8.6 Hz, 1H, H-8), 7.17 (dd, *J* = 8.6 Hz, *J* = 1.8 Hz, 1H, H-7), 4.96 (s, 2H, CH2).

13C NMR (100 MHz, DMSO-d6): δ 143.9 (C-1´), 143.3 (C=N), 135.0 (C-8a), 131.1 (q, *J* = 32.7 Hz, C-3’, C-5’), 126.4 (C-4b), 124.5 (C-9a), 123.8 (q, *J* = 272.8 Hz, 2 × CF3), 123.4 (C-7), 121.9 (C-2’, C-6’), 119.5 (C-5), 115.9 (C-4’), 112.8 (C-8), 111.9 (C-6), 110.6 (C-4a), 43.5 (CH2).

**General procedure for the synthesis of *trans*- and *cis*-diastereoisomers of 2,2’-diaminoanalogues of 5-bromo-1-methoxyspirobrassinol methyl ether 34a-36a and 34b-36b**

To a stirred solution of corresponding thiourea **9**-**11** (0.15 mmol) in anhydrous dichloromethane (1.6 mL) at room temperature was added freshly prepared solution of bromine (0.38 mL, 0.165 mmol; the stock solution prepared by dissolving of 0.04 mL of bromine in 1.76 mL of anhydrous dichloromethane). After stirring for 1 min, a solution of corresponding aniline (0.30 mmol) and triethylamine (0.288 g, 0.40 mL, 2.90 mmol) in anhydrous dichloromethane (2 mL) were added. After stirring for 5 min, the reaction mixture was diluted with dichloromethane (5 mL), washed with 1M HCl (5 mL), brine (10 mL) and water (10 mL), and dried over Na2SO4. The residue obtained after evaporation of the solvent was submitted to chromatography on silica gel to give products **34a**-**36b**.

***trans*-(±)-and *cis*-(±)-5-Bromo-1-methoxy-2-(3,4-dichlorophenylamino)-2’-(phenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-34a and (±)-34b]**.

Following the general procedure, products *trans-*(±)-**34a** and *cis*-(±)-**34b** were obtained using 0.058 g (0.15 mmol) of thiourea **9** and 3,4-dichloroaniline (0.049 g, 0.30 mmol) and separated on silica gel (20 g, eluent dichloromethane/ethyl acetate/ammonia 20:1:0.1). Fraction of *cis*-(±)-**34b** contained 3,4-dichloroaniline as impurity which was removed by repeated chromatography on silica gel (12 g, eluent *n*-hexane/ethyl acetate 1:1).

***trans*-(±)-34a**

Yield: 28% (0.023 g); bright yellow oil; Rf = 0.42 (dichloromethane/ethyl acetate/ammonia 20:1:0.1).

IR νmax: 3363 (NH), 2856, 1625, 1588, 1461, 1040 cm-1.

Anal. Calcd for C23H19BrCl2N4OS requires: C 50.20%; H 3.48%; N 10.18%; Found: C 50.37%; H 3.76%; N 10.39%.

1H NMR (400 MHz, CDCl3): δ 7.50 (d, *J* = 1.9 Hz, 1H, H-4), 7.40 (dd, *J* = 8.4 Hz, *J* = 1.9 Hz, 1H, H-6), 7.29-7.26 (m, 2H, H-3’’, H-5’’), 7.18-7.13 (m, 3H, H-2’’, H-6’’, H-5’), 7.08-7.04 (m, 1H, H-4’’), 7.00 (d, *J* = 2.8 Hz, 1H, H-2’), 6.87 (d, *J* = 8.4 Hz, 1H, H-7), 6.69 (dd, *J* = 8.8 Hz, *J* = 2.8 Hz, 1H, H-6’), 5.13 (d, *J* = 9.9 Hz, 1H, H-2), 4.67 (d, *J* = 9.9 Hz, 1H, NH), 4.42 (d, *J* = 13.3 Hz, 1H, Hb), 3.79 (s, 3H, N-OCH3), 3.77 (d, *J* = 13.3 Hz, 1H, Ha).

13C NMR (100 MHz, CDCl3): δ 158.4 (C=N), 148.2 (C-7a), 146.3 (C-1’), 143.1 (C-1’’), 132.9 (C-3’, C-6), 130.7 (C-5’), 129.1 (C-3’’, C-5’’), 128.3 (C-3a), 126.9 (C-4), 123.9 (C-4’’), 121.9 (C-4’), 120.6 (C-2’’, C-6’’), 116.2 (C-5), 115.9 (C-2’), 115.1 (C-7), 114.2 (C-6’), 90.6 (C-2), 64.9 (C-3), 64.2 (N-OCH3), 61.4 (CH2).

***cis*-(±)-34b**

Yield: 22% (0.018 g); bright yellow oil; Rf = 0.81 (*n*-hexane/ethyl acetate 1:1).

IR νmax: 3363 (NH), 2856, 1625, 1588, 1461, 1040 cm-1.

Anal. Calcd for C23H19BrCl2N4OS requires: C 50.20%; H 3.48%; N 10.18%; Found: C 50.43%; H 3.72%; N 10.46%.

1H NMR (400 MHz, CDCl3): δ 7.49 (d, *J* = 1.9 Hz, 1H, H-4), 7.40 (dd, *J* = 8.4 Hz, *J* = 1.9 Hz, 1H, H-6), 7.32-7.22 (m, 5H, H-2’’, H-6’’, H-3’’, H-5’’, H-5’), 7.09-7.05 (m, 1H, H-4’’), 7.04 (d, *J* = 2.8 Hz, 1H, H-2’), 6.84 (d, *J* = 8.4 Hz, 1H, H-7), 6.75 (dd, *J* = 8.7 Hz, *J* = 2.8 Hz, 1H, H-6’), 4.89 (d, *J* = 4.6 Hz, 2H, H-2, NH), 4.35 (d, *J* = 12.9 Hz, 1H, Ha), 3.94 (d, *J* = 12.9 Hz, 1H, Hb), 3.72 (s, 3H, N-OCH3).

13C NMR (100 MHz, CDCl3): δ 159.9 (C=N), 147.3 (C-7a), 145.2 (C-1’), 143.6 (C-1’’), 133.0 (C-3’), 132.9 (C-6), 132.7 (C-5’), 131.3 (C-3a), 129.1 (C-3’’, C-5’’), 125.8 (C-4), 123.8 (C-4’’), 121.1 (C-4’), 120.5 (C-2’’, C-6’’), 116.3 (C-5), 115.9 (C-2’), 114.8 (C-7), 114.0 (C-6’), 84.6 (C-2), 66.2 (C-3), 64.2 (N-OCH3), 63.4 (CH2).

***trans*-(±)-and *cis*-(±)-5-Bromo-1-methoxy-2-(****4-trifluoromethylphenylamino)-2’-(4-trifluoromethylphenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-35a and (±)-35b]**.

Following the general procedure, products *trans-*(±)-**35a** and *cis*-(±)-**35b** were obtained using 0.068 g (0.15 mmol) of thiourea **10** and 4-(trifluoromethyl)aniline (0.048 g, 0.038 mL, 0.30 mmol) and separated on silica gel (13 g, eluent *n*-hexane/ethyl acetate 4:1).

***trans*-(±)-35a**

Yield: 18% (0.016 g); bright yellow oil; Rf = 0.29 (*n*-hexane/ethyl acetate 4:1).

IR νmax: 3390 (NH), 2935, 2357, 1600, 1320, 1109 cm-1.

Anal. Calcd for C25H19BrF6N4OS requires: C 48.63%; H 3.10%; N 9.07%; Found: C 48.90%; H 3.34%; N 9.29%.

1H NMR (400 MHz, CDCl3): δ 7.53-7.51 (m, 3H, H-3’’, H-5’’, H-4), 7.44-7.41 (m, 3H, H-3’, H-5’, H-6), 7.21 (d, *J* = 8.3 Hz, 2H, H-2’’, H-6’’), 6.92-6.88 (m, 3H, H-2’, H-6’, H-7), 5.30 (d, *J* = 10.0 Hz, 1H, H-2), 4.80 (d, *J* = 10.0 Hz, 1H, NH’), 4.46 (d, *J* = 13.2 Hz, 1H, Hb), 3.80 (d, *J* = 13.2 Hz, 1H, Ha), 3.79 (s, 3H, N-OCH3).

13C NMR (100 MHz, CDCl3): δ 157.9 (C=N), 149.1 (C-7a), 148.2 (C-1’, C-1’’), 133.2 (C-6), 127.7 (C-3a), 126.9 (C-4), 126.7 (q, *J* = 3.9 Hz, C-3’, C-5’), 126.4 (q, *J* = 3.6 Hz, C-3’’, C-5’’), 125.6 (q, *J* = 32.1 Hz, C-4’’), 124.1 (q, *J* = 270.0 Hz, CF3), 123.4 (q, *J* = 276.0 Hz, CF3), 121.2 (q, *J* = 32.5 Hz, C-4’), 120.2 (C-2’’, C-6’’), 116.3 (C-5), 115.3 (C-7), 113.8 (C-2’, C-6’), 89.5 (C-2), 64.6 (C-3), 64.2 (N-OCH3), 60.4 (CH2).

***cis*-(±)-35b**

Yield: 31% (0.028 g); bright yellow oil; Rf = 0.47 (*n*-hexane/ethyl acetate 4:1).

IR νmax: 3390 (NH), 2935, 2357, 1600, 1320, 1109 cm-1.

Anal. Calcd for C25H19BrF6N4OS requires: C 48.63%; H 3.10%; N 9.07%; Found: C 48.87%; H 3.28%; N 9.33%.

1H NMR (400 MHz, CDCl3): δ 7.56-7.38 (m, 6H, H-3’, H-5’, H-3’’, H-5’’, H-4, H-6), 7.32 (d, *J* = 7.8 Hz, 2H, H-2’’, H-6’’), 6.96 (d, *J* = 8.5 Hz, 2H, H-2’, H-6’), 6.87 (d, *J* = 8.4 Hz, 1H, H-7), 5.04 (s 2H, H-2, NH’), 4.36 (d, *J* = 12.7 Hz, 1H, Ha), 3.96 (d, *J* = 12.7 Hz, 1H, Hb), 3.71 (s, 3H, N-OCH3).

13C NMR (100 MHz, CDCl3): δ 156.9 (C=N), 148.2 (C-7a), 147.3 (C-1’, C-1’’), 133.2 (C-6), 130.9 (C-3a), 126.8 (q, *J* = 3.9 Hz, C-3’, C-5’), 126.4 (q, *J* = 3.5 Hz, C-3’’, C-5’’), 126.0 (q, *J* = 37.0 Hz, C-4’’), 125.7 (C-4), 123.2 (q, *J* = 271.4 Hz, CF3), 122.0 (q, *J* = 273.0 Hz, CF3), 121.7 (q, *J* = 32.7 Hz, C-4’), 120.2 (C-2’’, C-6’’), 116.4 (C-5), 114.9 (C-7), 113.7 (C-2’, C-6’), 83.8 (C-2), 65.3 (C-3), 64.2 (N-OCH3), 61.9 (CH2).

***trans*-(±)-and *cis*-(±)-5-Bromo-1-methoxy-2-[3,5-bis(trifluoromethyl)phenylamino]-2’-[3,5-bis(trifluoromethyl)phenylamino]spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-36a and (±)-36b]**.

Following the general procedure, products *trans-*(±)-**36a** and *cis*-(±)-**36b** were obtained using 0.077 g (0.15 mmol) of thiourea **11** and 3,5-bis(trifluoromethyl)aniline (0.068 g, 0.047 mL, 0.30 mmol) and separated on silica gel (13 g, eluent dichloromethane).

***trans*-(±)-36a**

Yield: 21% (0.024 g); bright yellow oil; Rf = 0.47 (dichloromethane).

IR νmax: 3400, 2938, 1621, 1469, 1375, 1276 (CH3), 1127 cm-1.

Anal. Calcd for C27H17BrF12N4OS requires: C 43.04%; H 2.27%; N 7.44%; Found: C 43.25%; H 2.51%; N 7.72%.

1H NMR (400 MHz, CDCl3): δ 7.59 (s, 2H, H-2’’, H-6’’), 7.53 (s, 1H, H-4’’), 7.52 (d, *J* = 1.9 Hz, 1H, H-4), 7.45 (dd, *J* = 8.4 Hz, *J* = 1.9 Hz, 1H, H-6), 7.28 (s, 3H, H-2’, H-6’, H-4’), 6.92 (d, *J* = 8.4 Hz, 1H, H-7), 5.31 (d, *J* = 9.9 Hz, 1H, H-2), 4.86 (d, *J* = 9.9 Hz, 1H, NH’), 4.41 (d, *J* = 13.1 Hz, 1H, Hb), 3.84 (d, *J* = 13.1 Hz, 1H, Ha), 3.81 (s, 3H, N-OCH3).

13C NMR (100 MHz, CDCl3): δ 159.1 (C=N), 148.3 (C-7a), 147.3 (C-1’, C-1’’), 133.4 (C-6), 132.7 (q, *J* = 33.0 Hz, C-3’’, C-5’’), 132.3 (q, *J* = 32.4 Hz, C-3’, C-5’), 127.4 (C-3a), 126.9 (C-4), 123.2 (q, *J* = 272.6 Hz, 2 × CF3), 123.0 (q, *J* = 272.8 Hz, 2 × CF3), 120.0 (C-2’’, C-6’’), 116.8 (C-4’’), 116.6 (C-5), 115.4 (C-7), 113.9 (C-2’, C-6’), 112.8 (C-4’), 89.8 (C-2), 64.2 (C-3, N-OCH3, CH2).

***cis*-(±)-36b**

Yield: 30% (0.034 g); bright yellow oil; Rf = 0.61 (dichloromethane).

IR νmax: 3390, 2938, 1621, 1276, 1127 cm-1.

Anal. Calcd for C27H17BrF12N4OS requires: C 43.04%; H 2.27%; N 7.44%; Found: C 43.31%; H 2.44%; N 7.67%.

1H NMR (400 MHz, CDCl3): δ 7.67 (s, 2H, H-2’’, H-6’’), 7.55 (s, 1H, H-4’’), 7.53 (d, *J* = 1.9 Hz, 1H, H-4), 7.46 (dd, *J* = 8.4 Hz, *J* = 1.9 Hz, 1H, H-6), 7.33 (s, 2H, H-2’, H-6’), 7.32 (s, 1H, H-4’), 6.89 (d, *J* = 8.4 Hz, 1H, H-7), 5.17 (d, *J* = 10.2 Hz, 1H, NH’), 5.09 (d, *J* = 10.2 Hz, 1H, H-2), 4.37 (d, *J* = 12.2 Hz, 1H, Ha), 3.98 (d, *J* = 12.2 Hz, 1H, Hb), 3.72 (s, 3H, N-OCH3).

13C NMR (100 MHz, CDCl3): δ 156.3 (C=N), 147.3 (C-7a), 146.3 (C-1’, C-1’’), 133.5 (C-6), 132.8 (q, *J* = 32.2 Hz, C-3’’, C-5’’), 132.4 (q, *J* = 32.1 Hz, C-3’, C-5’), 130.3 (C-3a), 125.7 (C-4), 123.2 (q, *J* = 272.7 Hz, 2 × CF3), 123.1 (q, *J* = 272.8 Hz, 2 × CF3), 120.4 (C-2’’, C-6’’), 116.8 (C-4’’), 116.7 (C-5), 115.1 (C-7), 113.8 (C-2’, C-6’), 112.8 (C-4’), 83.6 (C-2), 65.7 (C-3), 64.2 (N-OCH3, CH2).

**General procedure for the synthesis of *trans*- and *cis*-diastereoisomers of 2,2’-diaminoanalogues of 5-bromo-1-Boc-spirobrassinol methyl ether 37a-40a and 37b-40b**

To a stirred solution of corresponding thiourea **14**-**17** (0.60 mmol) in anhydrous dichloromethane (12.8 mL) at room temperature was added freshly prepared solution of bromine (1.53 mL, 0.66 mmol; the stock solution prepared by dissolving of 0.04 mL of bromine in 1.76 mL of anhydrous dichloromethane). After stirring for 1 min, a mixture of corresponding aniline (0.90 mmol) and sodium hydride (0.108 g, 2.70 mmol, 60 % dispersion in mineral oil) in anhydrous dichloromethane (3.6 mL) were added. The aniline mixture was stirred for 60 minutes before being added to the reaction mixture. After stirring for 5 min, the reaction mixture was diluted with dichloromethane (15 mL), washed with brine (80 mL), water (80 mL) and dried over Na2SO4. The residue obtained after evaporation of the solvent was submitted to chromatography on silica gel to give products **37a**-**40b**.

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-(3,4-dichlorophenylamino)-2’-(phenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-37a and (±)-37b]**.

Following the general procedure, products *trans-*(±)-**37a** and *cis*-(±)-**37b** were obtained using 0.275 g (0.60 mmol) of thiourea **14** and 3,4-dichloroaniline (0.146 g, 0.90 mmol) and separated on silica gel (60 g, eluent *n*-hexane/acetone 7:1).

***trans*-(±)-37a**

Yield: 26% (0.094 g); bright yellow oil; Rf = 0.16 (*n*-hexane/acetone 7:1).

IR νmax: 3378 (NH), 2975, 1699, 1591, 1473, 1368, 1152 cm-1.

Anal. Calcd for C27H25BrCl2N4O2S requires: C 52.27%; H 4.06%; N 9.03%; Found: C 52.54%; H 4.27%; N 9.25%.

1H NMR (400 MHz, CDCl3): δ 7.66 (d, *J* = 8.7 Hz, 1H, H-7), 7.56 (d, *J* = 1.9 Hz, 1H, H-4), 7.41 (dd, *J* = 8.7 Hz, *J* = 1.9 Hz, 1H, H-6), 7.31-7.27 (m, 2H, H-3’’, H-5’’), 7.23 (d, *J* = 8.7 Hz, 1H, H-5’), 7.16 (d, *J* = 7.7 Hz, 2H, H-2’’, H-6’’), 7.08-7.04 (m, 1H, H-4’’), 6.79 (d, *J* = 2.5 Hz, 1H, H-2’), 6.52 (dd, *J* = 8.7 Hz, *J* = 2.5 Hz, 1H, H-6’), 5.77 (d, *J* = 8.7 Hz, 1H, H-2), 4.29 (d, *J* = 12.1 Hz, 1H, Hb), 4.09 (d, *J* = 12.1 Hz, 1H, Ha), 4.02 (d, *J* = 8.7 Hz, 1H, NH), 1.33 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 154.5 (C=N), 151.1 (C=O), 145.5 (C-1’, C-1’’), 141.3 (C-7a), 135.0 (C-3’), 133.1 (C-6), 131.8 (C-3a), 130.9 (C-5’), 129.1 (C-3’’, C-5’’), 127.0 (C-4), 123.8 (C-4’’), 122.2 (C-4’), 120.7 (C-2’’, C-6’’), 116.7 (C-7), 116.0 (C-5), 115.4 (C-2’), 113.6 (C-6’), 82.9 [C(CH3)3], 81.9 (C-2), 65.9 (C-3), 58.8 (CH2), 28.0 [C(CH3)3].

***cis*-(±)-37b**

Yield: 24% (0.087 g); bright yellow oil; Rf = 0.08 (*n*-hexane/acetone 7:1).

IR νmax: 3378 (NH), 2975, 1699, 1591, 1473, 1368, 1152 cm-1.

Anal. Calcd for C27H25BrCl2N4O2S requires: C 52.27%; H 4.06%; N 9.03%; Found: C 52.48%; H 4.32%; N 9.22%.

1H NMR (400 MHz, CDCl3): δ 7.66 (d, *J* = 8.6 Hz, 1H, H-7), 7.55 (d, *J* = 2.0 Hz, 1H, H-4), 7.41 (dd, *J* = 8.6 Hz, *J* = 2.0 Hz, 1H, H-6), 7.23-7.19 (m, 2H, H-3’’, H-5’’), 7.18 (d, *J* = 8.7 Hz, 1H, H-5’), 7.08-7.05 (m, 1H, H-4’’), 6.98 (d, *J* = 7.6 Hz, 2H, H-2’’, H-6’’), 6.79 (d, *J* = 2.7 Hz, 1H, H-2’), 6.52 (dd, *J* = 8.7 Hz, *J* = 2.7 Hz, 1H, H-6’), 5.59 (d, *J* = 9.6 Hz, 1H, H-2), 4.29 (d, *J* = 9.5 Hz, 1H, NH), 4.02 (d, *J* = 12.2 Hz, 1H, Hb), 3.73 (d, *J* = 12.2 Hz, 1H, Ha), 1.40 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 152.1 (C=N), 151.5 (C=O), 145.8 (C-1’, C-1’’), 139.7 (C-7a), 134.9 (C-3’), 132.9 (C-6), 130.7 (C-5’), 130.4 (C-3a), 129.0 (C-3’’, C-5’’), 127.6 (C-4), 123.9 (C-4’’), 121.8 (C-4’), 120.8 (C-2’’, C-6’’), 116.8 (C-7), 115.8 (C-5), 115.3 (C-2’), 113.3 (C-6’), 82.9 [C(CH3)3], 77.1 (C-2), 70.6 (C-3), 65.4 (CH2), 28.2 [C(CH3)3].

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-(4-trifluoromethylphenylamino)-2’-(4-fluorophenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-38a and (±)-38b]**.

Following the general procedure, products *trans-*(±)-**38a** and *cis*-(±)-**38b** were obtained using 0.288 g (0.60 mmol) of thiourea **15** and 4-(trifluoromethyl)aniline (0.145 g, 0.12 mL, 0.90 mmol) and separated on silica gel (60 g, eluent dichloromethane). Fraction of *cis*-(±)-**38b** contained impurity which was removed by repeated chromatography on silica gel (25 g, eluent *n*-hexane/ethyl acetate 2:1).

***trans*-(±)-38a**

Yield: 24% (0.092 g); colourless oil; Rf = 0.26 (dichloromethane).

IR νmax: 3325 (NH), 2978, 1711, 1615, 1502, 1473, 1368, 1318, 1152, 1064 cm-1.

Anal. Calcd for C28H25BrF4N4O2S requires: C 52.75%; H 3.95%; N 8.79%; Found: C 52.94%; H 4.13%; N 8.97%.

1H NMR (400 MHz, CDCl3): δ 7.68 (d, *J* = 8.7 Hz, 1H, H-7), 7.56 (d, *J* = 2.0 Hz, 1H, H-4), 7.46 (d, *J* = 8.6 Hz, 2H, H-3’, H-5’), 7.43 (dd, *J* = 8.7 Hz, *J* = 2.0 Hz, 1H, H-6), 7.09-7.03 (m, 2H, H-2’’, H-6’’), 6.99-6.93 (m, 2H, H-3’’, H-5’’), 6.72 (d, *J* = 8.6 Hz, 2H, H-2’, H-6’), 5.88 (d, *J* = 8.4 Hz, 1H, H-2), 4.23 (d, *J* = 8.4 Hz, 1H, NH), 4.22 (d, *J* = 11.9 Hz, 1H, Hb), 4.05 (d, *J* = 11.9 Hz, 1H, Ha), 1.29 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.4 (d, *J* = 242.7 Hz, C-4’’), 158.5 (C=N), 151.1 (C=O), 148.6 (C-1’), 142.8 (C-1’’), 140.0 (C-7a), 133.2 (C-6), 131.7 (C-3a), 127.0 (C-4), 126.9 (q, *J* = 3.8 Hz, C-3’, C-5’), 124.5 (q, *J* = 270.6 Hz, CF3), 122.5 (d, *J* = 8.0 Hz, C-2’’, C-6’’), 121.4 (q, *J* = 32.9 Hz, H-4’), 116.7 (C-7), 116.0 (C-5), 115.7 (d, *J* = 22.5 Hz, C-3’’, C-5’’), 113.3 (C-2’, C-6’), 82.9 [C(CH3)3], 81.3 (C-2), 65.2 (C-3), 54.6 (CH2), 27.9 [C(CH3)3].

***cis*-(±)-38b**

Yield: 27% (0.103 g); colourless oil; Rf = 0.07 (dichloromethane).

IR νmax: 3325 (NH), 2978, 1711, 1615, 1502, 1473, 1368, 1318, 1152, 1064 cm-1.

Anal. Calcd for C28H25BrF4N4O2S requires: C 52.75%; H 3.95%; N 8.79%; Found: C 52.92%; H 4.09%; N 8.92%.

1H NMR (400 MHz, CDCl3): δ 7.71 (d, *J* = 8.0 Hz, 1H, H-7), 7.55 (d, *J* = 2.0 Hz, 1H, H-4), 7.47-7.42 (m, 3H, H-6, H-3’, H-5’), 6.90-6.86 (m, 2H, H-3’’, H-5’’), 6.83-6.79 (m, 2H, H-2’’, H-6’’), 6.72 (d, *J* = 8.5 Hz, H-2’, H-6’), 5.75 (d, *J* = 9.7 Hz, 1H, H-2), 4.43 (d, *J* = 9.7 Hz, 1H, NH), 4.00 (d, *J* = 11.9 Hz, 1H, Hb), 3.72 (d, *J* = 11.9 Hz, 1H, Ha), 1.38 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 159.7 (C=N), 159.4 (d, *J* = 243.0 Hz, C-4’’), 151.4 (C=O), 148.8 (C-1’), 141.3 (C-1’’), 139.8 (C-7a), 133.1 (C-6), 130.4 (C-3a), 127.6 (C-4), 126.7 (q, *J* = 3.7 Hz, C-3’, C-5’), 124.6 (q, *J* = 270.6 Hz, CF3), 122.5 (d, *J* = 8.1 Hz, C-2’’, C-6’’), 120.7 (q, *J* = 32.7 Hz, H-4’), 116.8 (C-7), 115.8 (C-5), 115.6 (d, *J* = 22.5 Hz, C-3’’, C-5’’), 112.9 (C-2’, C-6’), 82.9 [C(CH3)3], 76.8 (C-2), 70.2 (C-3), 65.3 (CH2), 28.0 [C(CH3)3].

***trans*-(±)-and *cis*-(±)-5-Bromo-1-(*tert-*Butoxycarbonyl)-2-(4-trifluoromethylphenylamino)-2’-(4-trifluoromethylphenylamino)spiro{indoline-3,5’-[4’,5’]dihydrothiazole} [(±)-39a and (±)-39b]**.

Following the general procedure, products *trans-*(±)-**39a** and *cis*-(±)-**39b** were obtained using 0.318 g (0.60 mmol) of thiourea **16** and 4-(trifluoromethyl)aniline (0.145 g, 0.12 mL, 0.90 mmol) and separated on silica gel (60 g, eluent dichloromethane).

***trans*-(±)-39a**

Yield: 26% (0.107 g); colourless oil; Rf = 0.69 (dichloromethane).

IR νmax: 3313 (NH), 2978, 1708, 1600, 1474, 1369, 1319, 1104, 1064 cm-1.

Anal. Calcd for C29H25BrF6N4O2S requires: C 50.66%; H 3.67%; N 8.15%; Found: C 50.81%; H 3.88%; N 8.37%.

1H NMR (400 MHz, CDCl3): δ 7.98 (d, *J* = 8.7 Hz, 1H, H-7), 7.56 (d, *J* = 1.9 Hz, 1H, H-4), 7.53-7.40 (m, 5H, H-6, H-3’, H-5’, H-3’’, H-5’’), 6.95 (d, *J* = 8.4 Hz, 2H, H-2’’, H-6’’), 6.72 (d, *J* = 8.4 Hz, 2H, H-2’, H-6’), 5.89 (d, *J* = 8.6 Hz, 1H, H-2), 4.28 (d, *J* = 12.2 Hz, 1H, Hb), 4.23 (d, *J* = 8.6 Hz, 1H, NH), 4.11 (d, *J* = 12.2 Hz, 1H, Ha), 1.27 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 157.8 (C=N), 151.0 (C=O), 149.2 (C-1’’), 148.3 (C-1’), 140.1 (C-7a), 134.3 (C-3a), 133.3 (C-6), 127.6 (C-4), 126.7 (q, *J* = 3.7 Hz, C-3’, C-5’), 126.2 (q, *J* = 3.7 Hz, C-3’’, C-5’’), 124.1 (q, *J* = 32.8 Hz, C-4’’), 122.9 (q, *J* = 272.7 Hz, CF3), 122.6 (q, *J* = 273.0 Hz, CF3), 121.4 (q, *J* = 33.1 Hz, H-4’), 116.8 (C-7), 116.1 (C-5), 115.2 (C-2’’, C-6’’), 113.3 (C-2’, C-6’), 84.4 [C(CH3)3], 81.3 (C-2), 65.5 (C-3), 56.3 (CH2), 28.1 [C(CH3)3].

***cis*-(±)-39b**

Yield: 27% (0.111 g); colourless oil; Rf = 0.52 (dichloromethane).

IR νmax: 3313 (NH), 2978, 1708, 1600, 1474, 1369, 1319, 1104, 1064 cm-1.

Anal. Calcd for C29H25BrF6N4O2S requires: C 50.66%; H 3.67%; N 8.15%; Found: C 50.78%; H 3.90%; N 8.34%.

1H NMR (400 MHz, CDCl3): δ 7.71 (d, *J* = 8.5 Hz, 1H, H-7), 7.55 (d, *J* = 1.9 Hz, 1H, H-4), 7.46-7.41 (m, 5H, H-6, H-3’, H-5’, H-3’’, H-5’’), 6.99 (d, *J* = 8.2 Hz, 2H, H-2’’, H-6’’), 6.72 (d, *J* = 8.5 Hz, 2H, H-2’, H-6’), 5.75 (d, *J* = 9.6 Hz, 1H, H-2), 4.44 (d, *J* = 9.6 Hz, 1H, NH), 4.05 (d, *J* = 12.0 Hz, 1H, Hb), 3.76 (d, *J* = 12.0 Hz, 1H, Ha), 1.37 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 158.8 (C=N), 151.3 (C=O, C-1’’), 148.7 (C-1’), 139.7 (C-7a), 133.2 (C-6), 130.3 (C-3a), 127.6 (C-4), 126.8 (q, *J* = 3.6 Hz, C-3’, C-5’), 126.3 (q, *J* = 3.7 Hz, C-3’’, C-5’’), 125.5 (q, *J* = 32.8 Hz, C-4’’), 124.6 (q, *J* = 270.7 Hz, CF3), 124.2 (q, *J* = 271.5 Hz, CF3), 120.8 (q, *J* = 32.5 Hz, H-4’), 120.4 (C-2’’, C-6’’), 116.8 (C-7), 115.9 (C-5), 112.9 (C-2’, C-6’), 83.0 [C(CH3)3], 76.8 (C-2), 70.3 (C-3), 64.2 (CH2), 28.1 [C(CH3)3].

***trans*-(±)- a *cis-*(±)-5-Bróm-1-(*terc*-butoxykarbonyl)-2-(3,5-*bis*-trifluórmetylfenylamino)-2’-(3,5*-bis-*trifluórmetylfenylamino)-spiro{indolín-3,5’-[4’,5’]-dihydrotiazol} [(**±**)-40a, (**±**)-40b]**

Following the general procedure, products *trans-*(±)-**40a** and *cis*-(±)-**40b** were obtained using 0.360 g (0.60 mmol) of thiourea **17** and 3,5-bis(trifluoromethyl)aniline (0.206 g, 0.14 mL, 0.90 mmol) and separated on silica gel (60 g, eluent *n*-hexane/ethyl acetate 4:1).

***trans*-(±)-40a**

Yield: 25% (0.123 g); colourless oil; Rf = 0.5 (*n*-hexane/ethyl acetate 4:1).

IR νmax: 3324 (NH), 2870, 1698, 1635, 1600, 1474, 1379, 1274, 1123 cm-1.

Anal. Calcd for C31H23BrF12N4O2S requires: C 45.21%; H 2.82%; N 6.80%; Found: C 45.49%; H 3.07%; N 7.01%.

1H NMR (400 MHz, CDCl3): δ 7.66 (bs, 1H, H-7), 7.58 (d, *J* = 1.9 Hz, 1H, H-4), 7.56 (s, 2H, H-2’’, H-6’’), 7.54 (s, 1H, H-4’’), 7.47 (dd, *J* = 8.7 Hz, *J* = 1.9 Hz, 1H, H-6), 7.31 (s, 1H, H-4’), 7.08 (s, 2H, H-2’, H-6’), 5.85 (d, *J* = 8,4 Hz, 1H, H-2), 4.38 (d, *J* = 8.4 Hz, 1H, NH), 4.29 (d, *J* = 12.2 Hz, 1H, Hb), 4.13 (d, *J* = 12.2 Hz, 1H, Ha), 1.29 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 154.2 (C=N), 150.8 (C=O), 146.9 (C-1’’, C-1’), 140.3 (C-7a), 133.7 (C-6), 133.4 (C-3a), 132.9 (q, *J* = 33.2 Hz, C-3’, C-5’), 132.4 (q, *J* = 33.2 Hz, C-3’’, C-5’’), 127.2 (C-4), 123.2 (q, *J* = 273.2 Hz, 2 × CF3), 123.1 (q, *J* = 273.5 Hz, 2 × CF3), 120.9 (C-2’’, C-6’’), 119.1 (C-4’’), 116.9 (C-7), 116.3 (C-5), 113.5 (C-2’, C-6’), 112.8 (C-4’), 83.4 [C(CH3)3], 82.3 (C-2), 65.5 (C-3), 60.4 (CH2), 27.8 [C(CH3)3].

***cis*-(±)-40b**

Yield: 20% (0.099 g); white crystals; mp = 105-107 °C (dichloromethane/*n*-hexane), Rf = 0.38 (*n*-hexane/ethyl acetate 4:1).

IR νmax: 3324 (NH), 2870, 1698, 1635, 1600, 1474, 1379, 1274, 1123 cm-1.

Anal. Calcd for C31H23BrF12N4O2S requires: C 45.21%; H 2.82%; N 6.80%; Found: C 45.43%; H 2.98%; N 6.98%.

1H NMR (400 MHz, CDCl3): δ 7.69 (d, *J* = 8.5 Hz, 1H, H-7), 7.57 (d, *J* = 1.9 Hz, 1H, H-4), 7.50-7.41 (m, 2H, H-6, H-4’’), 7.28 (s, 2H, H-2’’, H-6’’), 7.31 (s, 1H, H-4’), 7.08 (s, 2H, H-2’, H-6’), 5.76 (d, *J* = 9.0 Hz, 1H, H-2), 4.57 (d, *J* = 9.0 Hz, 1H, NH), 3.97 (d, *J* = 11.4 Hz, 1H, Hb), 3.75 (d, *J* = 11.4 Hz, 1H, Ha), 1.38 [s, 9H, C(CH3)3].

13C NMR (100 MHz, CDCl3): δ 151.2 (C=N), 149.1 (C=O), 146.9 (C-1’’, C-1’), 139.7 (C-7a), 133.6 (C-6), 133.2 (C-3a), 132.8 (q, *J* = 33.1 Hz, C-3’, C-5’), 132.3 (q, *J* = 32.4 Hz, C-3’’, C-5’’), 127.8 (C-4), 123.2 (q, *J* = 272.8 Hz, 2 × CF3), 123.0 (q, *J* = 272.7 Hz, 2 × CF3), 121.1 (C-2’’, C-6’’), 117.0 (C-4’’), 116.9 (C-7), 116.2 (C-5), 112.5 (C-2’, C-6’), 112.2 (C-4’), 83.4 [C(CH3)3], 77.2 (C-2), 73.0 (C-3), 62.3 (CH2), 27.9 [C(CH3)3].

**Antiproliferative activity**

**Cell culture**

**Cancer cell lines**

Cell lines HCT116 and CaCo-2 (human colorectal carcinoma), Jurkat (human leukemic T cell lymphoma) and HeLa (human cervical cancer) were cultured in RPMI 1640 medium (Biosera, Kansas City, MO, United States). MCF-7 (human breast adenocarcinoma), MDA-MB-231 (human mammary gland adenocarcinoma), A549 (human alveolar adenocarcinoma) cell lines were maintained in a growth medium consisting of high glucose Dulbecco’s Modified Eagle Medium with sodium pyruvate (GE Healthcare, Piscataway, NJ, United States). The growth medium was supplemented with a 10% fetal bovine serum, 1X HyClone™ Antibiotic/Antimycotic Solution (GE Healthcare, Little Chalfont, UK).

Cells were cultured in an atmosphere containing 5% CO2 in humidified air at 37 °C. Cell viability, estimated by trypan exclusion, was greater than 95% before each experiment.

**3T3 (murine fibroblasts) cell line**

Cells were maintained in a growth medium consisting of high glucose Dulbecco’s Modified Eagle Medium with sodium pyruvate (GE Healthcare, Piscataway, NJ, USA). The growth medium was supplemented with a 10% fetal bovine serum (FBS), penicillin (100 IU/mL) and streptomycin (100 µg/mL) (all Invitrogen, Carlsbad, CA, USA) in an atmosphere containing 5% CO2 in humidified air at 37 °C. Cell viability, estimated by trypan exclusion, was greater than 95% before each experiment.

**Cytotoxicity assay**

The cytotoxic effects of compounds was studied using the colorimetric microculture assay with the MTT endpoint [2]. Briefly, cells were seeded at a density of 5 x 103 cells/well in 96-well polystyrene microplates (SARSTEDT, Nümbrecht, Germany). 24 hours after cell seeding, tested compounds at final concentrations of 10-6-10-4 mol × L-11 were added. After 72 h, cells in each well were incubated with 10 μL of MTT (5mg/ml, Sigma-Aldrich Chemie, Steinheim, Germany) at 37 ° C. After an additional 4 h, during which insoluble formazan was produced, 100 μl of a 10 % sodium dodecyl sulphate (SDS) was added in each well and another 12 h were allowed for the formazan to dissolve. The absorbance was measured at 540 nm using the automated Cytation™ 3 Cell Imaging Multi-Mode Reader (Biotek, Winooski, VT, United States). Three independent experiments were performed for each test. IC50 (50% inhibitory concentration) values were determined by 4 parameter logistic non-linear regression model using normalized concentration-response data obtained by MTT (Thiazolyl Blue Tetrazolium Bromide) assay.

**References**

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