

Chemistry. Chemicals were purchased from Sigma-Aldrich, Alfa Aesar, and TCI Chemicals. Unless otherwise stated, all chemicals were used without further purification. Thin layer chromatography (TLC) was performed using plates from Merck (silica gel 60 F254). Column chromatography was performed with 1:30 Merck silica gel 60 Å (63-200 µm) as the stationary phase. Flash chromatographic separations were performed on a Biotage SP1 purification system using flash cartridges pre-packed with KP-Sil 32–63 µm, 60 Å silica gel. ¹H NMR spectra were recorded on a Varian Mercury-VX spectrometer (300 MHz) or an Agilent NMR spectrometer (500 MHz). All chemical shift values are reported in ppm (δ). For enantiomeric pairs, NMR spectra of both enantiomers were recorded; however, only the NMR spectrum of the (*R*)-enantiomer is reported in the experimental section. Recording of mass spectra was performed on an HP6890-5973 MSD gas chromatograph/mass spectrometer; only significant *m/z* peaks, with their percentage of relative intensity in parentheses are reported. HRMS-ESI analyses were performed on a Bruker Daltonics MicrOTOF-Q II mass spectrometer, mass range 50-800 *m/z*, electrospray ion source in positive or negative ion mode. All spectra were in accordance with the assigned structures. The purity of the target compounds listed in Table 1 and Table 2 was assessed by RP-HPLC and combustion analysis. All compounds showed ≥ 98% purity. RP-HPLC analysis was performed on an Agilent 1260 Infinity Binary LC System equipped with a diode array detector using a Phenomenex Gemini C-18 column (250 x 4.6 mm, 5 µm particle size). All target compounds were eluted with CH₃OH/H₂O, 8:2 (v/v) at a flow rate of 1 mL/min. Elemental analyses (C,H,N) of the target compounds were performed on an Eurovector Euro EA 3000 analyzer. Analyses indicated by the symbols of the elements were within ± 0.4 % of the theoretical values. Enantiomeric purity of the target compounds (*R*)- and (*S*)-**24-27** was assessed by chiral HPLC analysis on a Perkin-Elmer series 200 LC instrument using a Daicel ChiralCel OD column (250 mm × 4.6 mm, 5 µm particle size) and equipped with a Perkin-Elmer 785A UV/VIS detector setting λ= 230 nm. The compounds were eluted with *n*-hexane/EtOH, 4:1, v/v at a flow rate of 0.8 mL/min. All compounds showed enantiomeric excesses ≥ 98%.

3-[1-(Aminomethyl)cyclopropyl]phenol (13). To a cooled solution of [1-(3-methoxyphenyl)cyclopropyl]methanamine (**11**) (0.51 g, 2.9 mmol) in anhydrous CH₂Cl₂ (10 mL) 1.0 M boron tribromide in CH₂Cl₂ (5 mL, 5.1 mmol) was added dropwise. The reaction mixture was stirred at room temperature for 4 h and neutralized with 10% aqueous NH₄OH. The aqueous phase was extracted with CH₂Cl₂ (2 × 20 mL). The combined organic layers were dried (Na₂SO₄) and concentrated under reduced pressure to give the target compound as a pale yellow solid (0.33 g, 70% yield), which was used in the next step without further purification. ¹H NMR (300 MHz, CDCl₃): δ= 0.72–0.81 (m, 4H), 1.35 (br s, 2H), 2.74 (s, 2H), 5.35 (br s, 1H), 6.84–6.88 (m, 3H), 7.26 ppm (m, 1H). GC/MS: *m/z* 163 (M⁺, 5), 133 (35), 105 (100).

4-[1-(Aminomethyl)cyclopropyl]phenol (14). Prepared as described above for derivative **13** starting from the [1-(3-methoxyphenyl)cyclopropyl]methanamine (**12**) (0.31 g; 65% yield). ¹H NMR (300 MHz, CDCl₃): δ= 0.74–0.83 (m, 4H), 1.35 (br s, 2H), 2.76 (s, 2H), 5.35 (br s, 1H), 6.79–6.82 (m, 2H), 7.16–7.19 ppm (m, 2H). GC/MS: *m/z* 163 (M⁺, 7), 133 (45), 105 (100).

General Procedure for the Synthesis of Boc-protected Derivatives (R)- and (S)-17-18, (2R)-30 and (2S)- 32,33. *N,N'*-Carbonyldiimidazole (1.1 mmol) was added to a solution of (R)- or (S)-Boc-protected amino acid (1.0 mmol), in anhydrous THF (10 mL) under N₂. The reaction mixture was stirred at room temperature overnight, then a solution of the appropriate amine (1.0 mmol) in anhydrous THF was added. The reaction mixture was stirred at room temperature for 6 h. After removal of the solvent *in vacuo*, the residue was partitioned between EtOAc (20 mL) and H₂O (2 × 20 mL). The aqueous layer was separated and extracted twice with EtOAc (20 mL). The collected organic layers were dried (Na₂SO₄) and evaporated *in vacuo*. The crude residue was chromatographed as detailed below to give pure target compound as a white solid.

(R)-tert-Butyl {3-(4-cyanophenyl)-1-[[[1-(3-hydroxyphenyl)cyclopropyl]methyl]amino]-1-oxopropan-2-yl}carbamate ((R)-17). Eluted with CHCl₃/AcOEt 8:2. 88% Yield. ¹H NMR (500 MHz, CDCl₃): δ= 0.76–0.85 (m, 4H), 1.38 (s, 9H), 2.10 (br s, 1H, D₂O exchanged), 2.96 (dd, 1H, *J*= 13.7 and 6.9 Hz), 3.08 (dd, 1H, *J*= 13.7 and 6.9 Hz), 3.28–3.31 (m, 1H), 3.36 (dd, 1H, *J*= 13.7 and 5.4 Hz), 4.24–4.32 (m, 1H), 5.12 (br d, 1H), 6.00 (br t, 1H), 6.66–6.71 (m, 3H), 7.12 (t, 1H, *J*= 7.8 Hz), 7.22 (d, 2H, *J*= 8.3 Hz), 7.52 ppm (d, 2H, *J*= 8.3 Hz). ESI⁺/MS *m/z* 458 (M+Na)⁺, ESI⁺/MS/MS *m/z* 358 (100).

(S)-tert-Butyl {3-(4-cyanophenyl)-1-[[[1-(3-hydroxyphenyl)cyclopropyl]methyl]amino]-1-oxopropan-2-yl}carbamate ((S)-17). Eluted with CHCl₃/AcOEt 8:2. 87% Yield. ESI⁺/MS *m/z* 458 (M+Na)⁺, ESI⁺/MS/MS *m/z* 358 (100).

(R)-tert-Butyl {3-(4-cyanophenyl)-1-[[[1-(4-hydroxyphenyl)cyclopropyl]methyl]amino]-1-oxopropan-2-yl}carbamate ((R)-18). Eluted with CHCl₃/AcOEt 8:2. 45% Yield. ¹H NMR (500 MHz, CDCl₃): δ= 0.76–0.85 (m, 4H), 1.37 (s, 9H), 1.91 (br s, 1H, D₂O exchanged), 2.96 (dd, 1H, *J*= 13.7, 6.9 Hz), 3.07 (dd, 1H, *J*= 13.7, 6.9 Hz), 3.28–3.30 (m, 1H), 3.36 (dd, 1H, *J*= 13.7, 5.3 Hz), 4.30–4.38 (m, 1H), 5.18 (br d, 1H), 6.10 (br t, 1H), 6.65–6.71 (m, 3H), 7.12 (t, 1H, *J*= 7.8 Hz), 7.21 (d, 2H, *J*= 7.8 Hz), 7.50 ppm (d, 2H, *J*= 8.3 Hz). ESI⁺/MS *m/z* 458 (M+Na)⁺, ESI⁺/MS/MS *m/z* 358 (100).

(S)-tert-Butyl {3-(4-cyanophenyl)-1-[[[1-(4-hydroxyphenyl)cyclopropyl]methyl]amino]-1-oxopropan-2-yl}carbamate ((S)-18). Eluted with CHCl₃/AcOEt 8:2. 51% Yield. ESI⁺/MS *m/z* 458 (M+Na)⁺, ESI⁺/MS/MS *m/z* 358 (100).

(2R)-tert-Butyl [1-oxo-1-[(2-oxoazepan-3-yl)amino]-3-phenylpropan-2-yl]carbamate ((2R)-30). Eluted with CHCl₃/AcOEt 7:3. 47% Yield. ¹H NMR (500 MHz, CDCl₃): δ= 1.24–1.45 (m + s, 11H), 1.77–1.85 (m, 2H), 1.93–2.07 (m, 2H), 3.05–3.09 (m, 2H), 3.22–3.30 (m, 2H), 4.42–4.45 (m, 2H),

5.00–5.10 (m, 1H), 6.07–6.13 (br d, 1H), 7.12 (br s, 1H), 7.17–7.24 (m, 3H), 7.26–7.30 ppm (m, 2H).
ESI⁺/MS *m/z* 398 (M+Na)⁺, ESI⁺/MS/MS *m/z* 129 (100).

(2S)-tert-Butyl [1-oxo-1-[(2-oxoazepan-3-yl)amino]-3-phenylpropan-2-yl]carbamate ((2S)-32).

Eluted with CHCl₃/AcOEt 7:3. 72% Yield. ¹H NMR (500 MHz, CDCl₃): δ= 1.24–1.45 (m + s, 11H), 1.75–1.83 (m, 2H), 1.93–2.07 (m, 2H), 3.04–3.07 (m, 2H), 3.21–3.33 (m, 2H), 4.42–4.45 (m, 2H), 5.00–5.10 (m, 1H), 6.07–6.13 (br d, 1H), 7.12 (br s, 1H), 7.17–7.24 (m, 3H), 7.26–7.30 ppm (m, 2H).
ESI⁺/MS *m/z* 398 (M+Na)⁺, ESI⁺/MS/MS *m/z* 129 (100).

(2S)-tert-Butyl {3-(4-hydroxyphenyl)-1-oxo-1-[(2-oxoazepan-3-yl)amino]propan-2-yl}carbamate ((2S)-33).

Eluted with CHCl₃/MeOH 19:1. 72% Yield. ¹H NMR (500 MHz, CDCl₃): δ= 1.28–1.45 (m + s, 11H), 1.76–1.82 (m, 3H, 1H D₂O exchanged), 1.90–2.07 (m, 2H), 2.92–3.00 (m, 2H), 3.21–3.27 (m, 2H), 4.38–4.46 (m, 2H), 5.14–5.30 (m, 1H), 6.36 (br s, 2H), 6.72 (d, 2H, *J*= 8.3 Hz), 6.99–7.05 (m, 2H), 7.15–7.16 ppm (m, 1H). ESI⁺/MS *m/z* 414 (M+Na)⁺, ESI⁺/MS/MS *m/z* 314 (100).

General Procedure for the Synthesis of Amines (R)- and (S)-21-22, (2R)-34 and (2S)-36,37.

To a solution of Boc-protected derivatives (R)- and (S)-17-18, (2R)-30,31 and (2S)-32,33 (0.46 mmol) in 1,4-dioxane (10 mL) 3N hydrochloric acid (5 mL) was added. The reaction mixture was stirred at room temperature for 24 h and basified with 5% aqueous NaOH. The separated aqueous phase was extracted with EtOAc (2 × 20 mL). The combined organic layers were dried (Na₂SO₄) and concentrated *in vacuo* to afford pure target amine (colorless oil) in quantitative yield.

(R)-2-Amino-3-(4-cyanophenyl)-N-[[1-(3-hydroxyphenyl)cyclopropyl]methyl]propanamide

((R)-21). ¹H NMR (500 MHz, CDCl₃): δ= 0.77–0.89 (m, 4H), 1.58 (br s, 2H, D₂O exchanged), 2.20 (br s, 1H, D₂O exchanged), 2.76 (dd, 1H, *J*= 13.7, 8.3 Hz), 3.16 (dd, 1H, *J*= 13.7 Hz, 4.4 Hz), 3.35

(dd, 1H, $J=13.7, 5.3$ Hz), 3.49 (dd, 1H, $J=13.7, 5.3$ Hz), 3.57 (dd, 1H, $J=8.3, 4.4$ Hz), 6.69-6.72 (m, 2H), 6.79 (br s, 1H), 7.13 (t, 1H, $J=7.8$ Hz), 7.23-7.26 (m, 2H), 7.29 (br t, 1H), 7.54 ppm (d, 2H, $J=8.3$ Hz). ESI⁺/MS m/z 358 (M+Na)⁺, ESI⁺MS/MS m/z 188 (57), 171 (39), 109 (100).

(S)-2-Amino-3-(4-cyanophenyl)-N-[[1-(3-hydroxyphenyl)cyclopropyl]methyl]propanamide ((S)-21). ESI⁺/MS m/z 358 (M+Na)⁺, ESI⁺MS/MS m/z 188 (57), 171 (40), 109 (100).

(R)-2-Amino-3-(4-cyanophenyl)-N-[[1-(4-hydroxyphenyl)cyclopropyl]methyl]propanamide

((R)-22). ¹H NMR (500 MHz, CDCl₃): $\delta=0.77-0.83$ (m, 4H), 1.57 (br s, 2H, D₂O exchanged), 2.15 (br s, 1H, D₂O exchanged), 2.73 (dd, 1H, $J=13.7, 8.3$ Hz), 3.13 (dd, 1H, $J=13.7$ Hz, 4.4 Hz), 3.37 (dd, 1H, $J=13.7, 5.8$ Hz), 3.42 (dd, 1H, $J=13.7, 5.8$ Hz), 3.55 (dd, 1H, $J=8.3, 4.4$ Hz), 6.72 (d, 2H, $J=8.8$ Hz), 7.08 (d, 2H, $J=8.8$ Hz), 7.23 (d, 2H, $J=8.3$ Hz), 7.29 (br t, 1H), 7.53 ppm (d, 2H, $J=8.3$ Hz). ESI/MS m/z 334 (M-H)⁻, ESI⁻MS/MS m/z 116 (100), 133 (10), 188 (11).

(S)-2-Amino-3-(4-cyanophenyl)-N-[[1-(4-hydroxyphenyl)cyclopropyl]methyl]propanamide

((S)-22). ESI/MS m/z 334 (M-H)⁻, ESI⁻MS/MS m/z 116 (100), 160 (56), 188 (4).

(2R)-2-Amino-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2R)-34). ¹H NMR (500 MHz, CDCl₃): $\delta=1.36-1.53$ (m, 2H), 1.60 (br s, 2H, D₂O exchanged), 1.80-1.90 (m, 2H), 2.0-2.05 (m, 2H), 2.67-2.75 (m, 1H), 3.21-3.35 (m, 3H), 3.61 (td, 1H, $J=9.3, 4.4$ Hz), 4.51-4.56 (m, 1H), 6.07 (br t, 1H), 7.21-7.25 (m, 3H), 7.30-7.32 (m, 2H), 8.10-8.30 ppm (m, 1H). ESI⁺/MS m/z 298 (M+Na)⁺, ESI⁺MS/MS m/z 84 (100), 120 (46), 129 (38).

(2S)-2-Amino-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2S)-36). ¹H NMR (500 MHz, CDCl₃): $\delta=1.36-1.52$ (m, 2H), 1.53 (br s, 2H, D₂O exchanged), 1.79-1.90 (m, 2H), 2.0-2.05 (m, 2H), 2.67-2.75 (m, 1H), 3.21-3.35 (m, 3H), 3.59-3.63 (m, 1H), 4.51-4.56 (m, 1H), 6.09 (br s, 1H), 7.21-7.26 (m, 3H), 7.29-7.32 (m, 2H), 8.12-8.30 ppm (m, 1H). ESI⁺/MS m/z 298 (M+Na)⁺, ESI⁺MS/MS m/z 84 (100), 120 (46), 129 (38).

(2S)-2-Amino-3-(4-hydroxyphenyl)-N-(2-oxoazepan-3-yl)propanamide ((2S)-37). ¹H NMR (500 MHz, CD₃OD): δ= 1.22–1.55 (m, 2H), 1.68–2.05 (m, 4H), 2.68–2.75 (m, 1H), 2.85–2.98 (m, 1H), 3.16–3.31 (m, 2H), 3.51–3.58 (m, 1H), 4.45–4.60 (m, 1H), 6.72 (d, 2H, *J*= 8.3 Hz), 7.02–7.07 ppm (m, 2H). ESI/MS *m/z* 314 (M+Na)⁺, ESI⁺MS/MS *m/z* 84 (100), 120 (49).

General Procedure for the Synthesis of the Compounds (R)- and (S)-23,25-27, (2R)-38,39,46 and (2S)-40,41,47. To a solution of the amine (*R*)- and (*S*)-19-22, (2*R*)-34,35 and (2*S*)-36,37 (1.0 mmol) in anhydrous THF, a solution of the appropriate 3- or 4-substituted phenylisocyanate (1.2 mmol) in the same solvent (10 mL) was added and the reaction mixture was stirred at room temperature overnight. After removing the solvent *in vacuo*, the residue was dissolved in CHCl₃ (20 mL) and washed with H₂O (2 × 20 mL). The separated organic layer was dried over Na₂SO₄ and concentrated under reduced pressure. The crude residue was chromatographed as detailed below. When necessary, the obtained solid was further purified by crystallization from MeOH to give the pure target compound.

(S)-3-(4-Cyanophenyl)-2-[3-(4-methoxyphenyl)ureido]-N-[(1-phenylcyclopropyl)methyl]propanamide ((S)-23). Eluted with CHCl₃/AcOEt 8:2. 49% Yield. ESI⁺/MS *m/z* 491 (M+Na)⁺, ESI⁺/MS/MS *m/z* 491 (100), 342 (28).

(S)-3-(4-Hydroxyphenyl)-2-[3-(4-methoxyphenyl)ureido]-N-[(1-phenylcyclopropyl)methyl]propanamide ((S)-25). Eluted with CHCl₃/MeOH 19:1. 40% Yield. ESI⁺/MS *m/z* 460 (M+H)⁺, ESI⁺/MS/MS *m/z* 460 (5), 136 (100). Anal. calcd for C₂₇H₂₉N₃O₄: C 70.57, H 6.36, N 9.14, found: C 70.39, H 6.23, N 9.34

(R)-3-(4-Cyanophenyl)-N-((1-(3-hydroxyphenyl)cyclopropyl)methyl)-2-(3-(4-methoxyphenyl)ureido)propanamide ((R)-26). Eluted with CHCl₃/AcOEt 1:1. 12% Yield. ¹H

NMR (500 MHz, [D6]DMSO): δ = 0.69–0.71 (m, 1H), 0.77–0.79 (m, 1H), 0.82–0.85 (m, 2H), 2.76 (dd, 1H, J = 13.7, 7.8 Hz), 2.95 (dd, 1H, J = 13.7, 4.9 Hz), 3.10 (dd, 1H, J = 13.7, 4.4 Hz), 3.49 (dd, 1H, J = 13.7, 6.5 Hz), 3.66 (s, 3H), 4.49–4.54 (m, 1H), 6.16 (d, 1H, J = 8.3 Hz), 6.56 (d, 1H, J = 8.3 Hz), 6.65–6.68 (m, 2H), 6.77 (d, 2H, J = 8.8 Hz), 7.02 (t, 1H, J = 7.8 Hz), 7.17–7.22 (m, 4H), 7.66 (d, 2H, J = 8.3 Hz), 8.13(br t, 1H), 8.41 (s, 1H), 9.23 ppm (s, 1H). ESI/MS m/z 483 (M-H)⁻, ESI-MS/MS m/z 116 (11), 188 (27), 317 (100). Anal. calcd for C₂₈H₂₈N₄O₄: C 69.41, H 5.82, N 11.56, found: C 69.54, H 5.84, N 11.34

(S)-3-(4-Cyanophenyl)-N-((1-(3-hydroxyphenyl)cyclopropyl)methyl)-2-(3-(4-methoxyphenyl)ureido)propanamide ((S)-26). Eluted with CHCl₃/AcOEt 1:1. 15% Yield. ESI/MS m/z 483 (M-H)⁻, ESI-MS/MS m/z 116 (11), 188 (27), 317 (100). Anal. calcd for C₂₈H₂₈N₄O₄: C 69.41, H 5.82, N 11.56, found: C 69.33, H 5.94, N 11.34

(R)-3-(4-Cyanophenyl)-N-[[1-(4-hydroxyphenyl)cyclopropyl]methyl]-2-[3-(4-methoxyphenyl)ureido]propanamide ((R)-27). Eluted with CHCl₃/AcOEt 1:1. 17% Yield. ¹H NMR (500 MHz, [D6]DMSO): δ = 0.69–0.71 (m, 1H), 0.77–0.79 (m, 1H), 0.82–0.85 (m, 2H), 2.75 (dd, 1H, J = 13.7, 7.8 Hz), 2.93 (dd, 1H, J = 13.7, 4.9 Hz), 3.05 (dd, 1H, J = 13.7, 4.9 Hz), 3.42 (dd, 1H, J = 13.7, 6.4 Hz), 3.66 (s, 3H), 4.49–4.51 (m, 1H), 6.19 (d, 1H, J = 8.2 Hz), 6.62 (d, 2H, J = 8.8 Hz), 6.76 (d, 2H, J = 8.8 Hz), 7.05 (d, 2H, J = 8.3 Hz), 7.19 (d, 4H, J = 7.9 Hz), 7.66 (d, 2H, J = 8.3 Hz), 8.07 (br t, 1H), 8.44 (s, 1H), 9.16 ppm (s, 1H). ESI/MS m/z 483 (M-H)⁻, ESI-MS/MS m/z 188 (26), 317 (100). Anal. calcd for C₂₈H₂₈N₄O₄: C 69.41, H 5.82, N 11.56, found: C 69.52, H 5.76, N 11.54

(S)-3-(4-Cyanophenyl)-N-[[1-(4-hydroxyphenyl)cyclopropyl]methyl]-2-[3-(4-methoxyphenyl)ureido]propanamide ((S)-27). Eluted with CHCl₃/AcOEt 1:1. 29% Yield. ESI/MS m/z 483 (M-H)⁻, ESI-MS/MS m/z 116 (55), 288 (15), 317 (100). Anal. calcd for C₂₈H₂₈N₄O₄: C 69.41, H 5.82, N 11.56, found: C 69.62, H 5.69, N 11.62

(2R)-2-[3-(4-Methoxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2R)-38).

Eluted with CHCl₃/MeOH 98:2. 54% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.15–1.22 (m, 1H), 1.29–1.40 (m, 1H), 1.58–1.88 (m, 4H), 2.77–2.83 (m, 1H), 2.96 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.02–3.06 (m, 1H), 3.12–3.20 (m, 1H), 3.66 (s, 3H), 4.34–4.38 (m, 1H), 4.46–4.55 (m, 1H), 6.21–6.27 (m, 1H), 6.76 (d, 2H, *J*= 8.8 Hz), 7.15–7.26 (m, 7H), 7.83 (br s, 1H), 7.97–8.05 (m, 1H), 8.47 ppm (d, 1H, *J*= 6.4 Hz). ESI⁺/MS *m/z* 447 (M+Na)⁺, ESI⁺/MS/MS *m/z* 447 (100), 324 (26), 298 (67).

(2R)-2-[3-(3-Methoxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2R)-39).

Eluted with CHCl₃/AcOEt 8:2. 85% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.15–1.24 (m, 1H), 1.27–1.41 (m, 1H), 1.59–1.88 (m, 4H), 2.78–2.84 (m, 1H), 2.96 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.01–3.07 (m, 1H), 3.12–3.20 (m, 1H), 3.67 (s, 3H), 4.34–4.39 (m, 1H), 4.49–4.57 (m, 1H), 6.29–6.36 (m, 1H), 6.44 (dd, 1H, *J*= 8.3, 2.4 Hz), 6.77 (d, 1H, *J*= 7.8 Hz), 7.06–7.09 (m, 2H), 7.16–7.18 (m, 1H), 7.22–7.26 (m, 4H), 7.81–7.83 (m, 1H), 8.00–8.09 (m, 1H), 8.67 ppm (br d, 1H). ESI⁺/MS *m/z* 447 (M+Na)⁺, ESI⁺/MS/MS *m/z* 447 (100), 324 (62), 298 (54).

(2S)-2-[3-(4-Methoxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2S)-40).

Eluted with CHCl₃/MeOH 98:2. 32% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.15–1.26 (m, 1H), 1.28–1.39 (m, 1H), 1.55–1.88 (m, 4H), 2.77–2.83 (m, 1H), 2.95 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.02–3.06 (m, 1H), 3.11–3.20 (m, 1H), 3.66 (s, 3H), 4.33–4.37 (m, 1H), 4.46–4.54 (m, 1H), 6.25–6.31 (m, 1H), 6.76 (d, 2H, *J*= 8.8 Hz), 7.15–7.26 (m, 7H), 7.82 (br s, 1H), 7.96–8.05 (m, 1H), 8.50 ppm (d, 1H, *J*= 8.3 Hz). ESI⁺/MS *m/z* 447 (M+Na)⁺, ESI⁺/MS/MS *m/z* 447 (100), 324 (30), 298 (66).

(2S)-2-[3-(3-Methoxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2S)-41).

Eluted with CHCl₃/AcOEt 8:2. 82% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.15–1.24 (m, 1H), 1.27–1.41 (m, 1H), 1.58–1.88 (m, 4H), 2.78–2.84 (m, 1H), 2.96 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.01–3.07 (m, 1H), 3.12–3.19 (m, 1H), 3.66 (s, 3H), 4.34–4.38 (m, 1H), 4.49–4.57 (m, 1H), 6.28–6.36 (m, 1H),

6.44 (dd, 1H, $J = 8.3, 2.4$ Hz), 6.77 (d, 1H, $J = 7.8$ Hz), 7.05–7.09 (m, 2H), 7.15–7.18 (m, 1H), 7.21–7.26 (m, 4H), 7.79–7.83 (m, 1H), 7.98–8.08 (m, 1H), 8.66 ppm (br d, 1H). ESI⁺/MS m/z 447 (M+Na)⁺, ESI⁺/MS/MS m/z 447 (100), 324 (65), 298 (81).

(2S)-2-[3-(4-Bromophenyl)ureido]-3-(4-hydroxyphenyl)-N-(2-oxoazepan-3-yl)propanamide

((2S)-47). Eluted with CHCl₃/MeOH 98:2. 22% Yield. ¹H NMR (500 MHz, [D₆]DMSO): $\delta = 1.12$ – 1.39 (m, 2H), 1.56 – 1.87 (m, 4H), 2.67 – 2.73 (m, 1H); 2.81 – 2.93 (m, 1H), 3.01 – 3.05 (m, 1H), 3.11 – 3.20 (m, 1H), 4.33 – 4.39 (m, 1H), 4.40 – 4.47 (m, 1H), 6.28 – 6.36 (m, 1H), 6.62 (d, 2H, $J = 8.3$ Hz), 7.00 (dd, 2H, $J = 8.8, 3.4$ Hz), 7.29 (dd, 2H, $J = 8.8, 1.5$ Hz), 7.35 (d, 2H, $J = 8.8$ Hz), 7.79 – 7.83 (m, 1H), 7.92 – 8.01 (m, 1H), 8.84 (d, 1H, $J = 10.3$ Hz), 9.15 ppm (br s, 1H). ESI⁺/MS m/z 511 (M+Na)⁺, ESI⁺/MS/MS m/z 340 (22), 314 (100). Anal. calcd for C₂₂H₂₅BrN₄O₄: C 54.00, H 5.15, N 11.46, found: C 54.32, H 5.04, N 11.54.

General Procedure for the Synthesis of the Final Compounds (S)-24, (2R)-42,43 and (2S)-44,45.

To a cooled solution of the methoxy derivatives (S)-23, (2R)-38,39 and (2S)-40,41 (2.0 mmol) in anhydrous CH₂Cl₂ (10 mL), 1.0 M boron tribromide in CH₂Cl₂ (3.45 mL, 3.45 mmol) was added dropwise. The reaction mixture was stirred at room temperature for 4 h and basified with 10% aqueous NH₄OH. The separated aqueous phase was extracted with CH₂Cl₂ (2 × 20 mL). The combined organic layers were dried (Na₂SO₄) and concentrated under reduced pressure. The crude residue was chromatographed as detailed below to give the target compound as solid, which was further purified by crystallization from MeOH.

(S)-3-(4-Cyanophenyl)-2-[3-(4-hydroxyphenyl)ureido]-N-[(1-

phenylcyclopropyl)methyl]propanamide ((S)-24). Eluted with CHCl₃/MeOH 98:2. 8% Yield.

ESI⁺/MS m/z 455 (M+H)⁺, ESI⁺/MS/MS m/z 145 (100), 131 (65). Anal. calcd for C₂₇H₂₆N₄O₃: C 71.35, H 5.77, N 12.33, found: C 71.32, H 5.62, N 12.56.

(2R)-2-[3-(4-Hydroxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2R)-42).

Eluted with CHCl₃/MeOH 19:1. 26% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.15–1.28 (m, 1H), 1.31–1.39 (m, 1H), 1.55–1.88 (m, 4H), 2.77–2.83 (m, 1H), 3.03 (dd, 2H, *J*= 13.7, 4.4 Hz), 3.11–3.20 (m, 1H), 4.34–4.37 (m, 1H), 4.45–4.21 (m, 1H), 6.14 (d, 1H, *J*= 7.8 Hz), 6.59 (d, 2H, *J*= 8.8 Hz), 7.04–7.08 (m, 2H), 7.15–7.18 (m, 1H), 7.21–7.26 (m, 4H), 7.81–7.83 (m, 1H), 8.01 (d, 1H, *J*= 6.9 Hz), 8.31 (s, 1H), 8.93 ppm (s, 1H). ESI⁺/MS *m/z* 433 (M+Na)⁺, ESI⁺/MS/MS *m/z* 433 (100), 324 (30), 298 (70). Anal. calcd for C₂₂H₂₆N₄O₄: C 64.37, H 6.38, N 13.65, found: C 64.49, H 6.34, N 13.34.

(2R)-2-[3-(3-Hydroxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2R)-43).

Eluted with CHCl₃/MeOH 19:1. 41% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.12–1.41 (m, 2H), 1.56–1.88 (m, 4H), 2.77–2.83 (m, 1H), 2.96 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.01–3.06 (m, 1H), 3.12–3.20 (m, 1H), 4.34–4.38 (m, 1H), 4.48–4.56 (m, 1H), 6.21–6.29 (m, 2H), 6.64 (d, 1H, *J*= 7.8 Hz), 6.90–6.95 (m, 2H), 7.15–7.20 (m, 1H), 7.21–7.26 (m, 4H), 7.80–7.83 (m, 1H), 7.97–8.08 (m, 1H), 8.52 (d, 1H, *J*= 3.9 Hz), 9.17 ppm (s, 1H). ESI/MS *m/z* 409 (M-H)⁻, ESI-MS/MS *m/z* 274 (70), 182 (86), 134 (100). Anal. calcd for C₂₂H₂₆N₄O₄: C 64.37, H 6.38, N 13.65, found: C 64.65, H 6.52, N 13.48.

(2S)-2-[3-(4-Hydroxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2S)-44).

Eluted with CHCl₃/MeOH 19:1. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.12–1.39 (m, 2H), 1.55–1.87 (m, 4H), 2.77–2.82 (m, 1H), 2.94 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.01–3.04 (m, 1H), 3.11–3.19 (m, 1H), 4.32–4.37 (m, 1H), 4.45–4.53 (m, 1H), 6.11–6.18 (m, 1H), 6.58 (d, 2H, *J*= 8.8 Hz), 7.04–7.08 (m, 2H), 7.15–7.18 (m, 1H), 7.20–7.27 (m, 4H), 7.81–7.84 (m, 1H), 7.94–8.03 (m, 1H), 8.28 (s, 1H), 8.92 ppm (s, 1H). 74% Yield. ESI⁺/MS *m/z* 433 (M+Na)⁺, ESI⁺/MS/MS *m/z* 433 (100), 324 (25), 298 (62). Anal. calcd for C₂₂H₂₆N₄O₄: C 64.37, H 6.38, N 13.65, found: C 64.52, H 6.29, N 13.56.

(S)-2-[3-(3-Hydroxyphenyl)ureido]-N-(2-oxoazepan-3-yl)-3-phenylpropanamide ((2S)-45).

Eluted with CHCl₃/MeOH 19:1. 28% Yield. ¹H NMR (500 MHz, [D₆]DMSO): δ= 1.12–1.41 (m, 2H), 1.56–1.88 (m, 4H), 2.77–2.83 (m, 1H), 2.96 (dd, 1H, *J*= 13.7, 5.4 Hz), 3.01–3.06 (m, 1H), 3.12–3.20 (m, 1H), 4.34–4.38 (m, 1H), 4.48–4.56 (m, 1H), 6.21–6.29 (m, 2H), 6.64 (d, 1H, *J*= 7.8 Hz), 6.90–6.95 (m, 2H), 7.15–7.20 (m, 1H), 7.21–7.26 (m, 4H), 7.80–7.83 (m, 1H), 7.97–8.08 (m, 1H), 8.52 (d, 1H, *J*= 3.9 Hz), 9.17 ppm (s, 1H). ESI/MS *m/z* 409 (M-H)⁻, ESI-MS/MS *m/z* 274 (70), 182 (86), 134 (100). Anal. calcd for C₂₂H₂₆N₄O₄: C 64.37, H 6.38, N 13.65, found: C 64.39, H 6.35, N 13.59.