

1 Supporting Information

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3 *N*-(hexyl)-ent-kaur-16-en-19-amide (**4**, 88%): white crystals, mp 62-66 °C; $[\alpha]_D$: - 319°
4 (CH₂Cl₂, c 0.1); IR (KBr): ν = 3388 (N-H), 2925 (C-H), 1650 (C=C), 1650 (C=O); ¹H NMR
5 (200 MHz, CDCl₃): δ 0.92 (s, 3H, H-20), 1.15 (s, 3H, H-18), 2.63 (s, 1H, H-13), 4.73 (br s,
6 1H, H-17_a), 4.79 (br s, 1H, H-17_b), 3.19-3.26 (m, 2H, H-1'), 1.2-1.4 (br s, 6H, H-2_a', H-3_a',
7 H-4' and H-5'), 1.4-1.6 (m, 2H, H-2_b' and H-3_b'), 0.88 (br t, 3H, Me-6'), 5.58 (br t, 1H,
8 NH). ¹³C NMR (50 MHz, CDCl₃): δ 41.2 (1), 19.4 (2), 38.4 (3), 43.7 (4), 57.4 (5), 22.5 (6),
9 41.5 (7), 44.3 (8), 55.1 (9), 39.6 (10), 18.4 (11), 33.0 (12), 43.8 (13), 39.6 (14), 48.9 (15),
10 155.8 (16), 102.9 (17), 30.1 (18), 176.7 (19), 15.7 (20), 39.5 (1'), 31.4 (2'), 29.3 (3'), 26.8
11 (4'), 22.5 (5'), 13.9 (6'). EIMS: m/z (rel.int.) = 384 (9) [M-H]⁺, 342 (4) [M-C₃H₇]⁺, 257
12 (27) [M-CONHC₆H₁₃]⁺, 170 (100), 143 (96), 81 (93), 55 (78). Elem. Anal. Calcd. for
13 C₂₆H₄₃NO: C, 80.96%; H, 11.25%; N, 3.63%. Found: C, 80.87%; H, 11.94%; N, 3.5%.

14 *N*-(hexyl)-ent-kaur-9(11),16-dien-19-amide (**5**, 80%): white crystals, mp 73-75 °C; $[\alpha]_D$: +
15 22° (CH₂Cl₂, c 0.1); IR (KBr): ν = 3388 (N-H), 2950 (C-H), 1650 (C=C), 1650 (C=O); ¹H
16 NMR (200 MHz, CDCl₃): δ 0.95 (s, 3H, H-20), 1.12 (s, 3H, H-18), 2.68 (br s, 1H, H-13),
17 4.71 (br s, 1H, H-17_a), 4.83 (br s, 1H, H-17_b), 5.14 (br t, J =3.20, 1H, H-11), 3.08-3.17 (m,
18 2H, H-1'), 1.2-1.4 (br s, 4H, H-2_a', H-3_a', H-4_a' and H-5_a'), 1.4-1.7 (m, 4H, H-2_b', H-3_b',
19 H-4_b' and H-5_b'), 0.80 (br t, J =6.5, 3H, H-6'), 5.7 (br t, 1H, NH). ¹³C NMR (50 MHz,
20 CDCl₃): δ 39.6 (1), 20.6 (2), 38.8 (3), 44.2 (4), 47.5 (5), 19.0 (6), 29.4 (7), 42.3 (8), 158.7
21 (9), 38.9 (10), 114.9 (11), 38.0 (12), 41.3 (13), 45.1 (14), 50.8 (15), 156.2 (16), 105.5 (17),
22 29.6 (18), 177.1 (19), 24.0 (20), 41.4 (1'), 31.6 (2'), 30.1 (3'), 26.8 (4'), 22.7 (5'), 14.1 (6').
23 EIMS: m/z (rel.int.) = 255 (12) [M-CONHC₆H₁₃]⁺, 211 (11), 170 (59), 143 (32), 91 (54), 55

1 (100). Elem. Anal. Calcd. for $C_{26}H_{41}NO$: C, 81.39%; H, 10.77%; N, 3.65 %. Found: C,
2 81.42%; H, 10.78%; N, 3.67%.

3 *N*-(cyclohexyl)-*ent*-kaur-16-en-19-amide (**6**, 94%): oil ; $[\alpha]_D$: - 73° (CH_2Cl_2 , c 0.1); IR
4 (KBr): ν = 3388 (N-H), 2925 (C-H), 1650 (C=C), 1650 (C=O); 1H NMR (200 MHz,
5 $CDCl_3$): δ 0.93 (s, 3H, H-20), 1.14 (s, 3H, H-18), 2.63 (br s, 1H, H-13), 4.73 (br s, 1H, H-
6 17_a), 4.79 (br s, 1H, H-17_b), 3.6-3.9 (m, 1H, H-1'), 1.4-1.6 (br s, 1H, H-2_a'), 1.8-2.0 (m, 1H,
7 H-2_b'), 1.1-1.4 (br s, 2H, H-3_a' and H-4_a'), 1.6-1.8 (m, 2H, H-3_b' and H-4_b'), 5.45 (br d,
8 $J=7.5$, 1H, NH). ^{13}C NMR (50 MHz, $CDCl_3$): δ 41.3 (1), 19.6 (2), 38.5 (3), 43.7 (4), 57.5
9 (5), 22.6 (6), 41.7 (7), 44.4 (8), 55.2 (9), 39.8 (10), 18.6 (11), 33.0 (12), 43.9 (13), 39.7
10 (14), 49.1 (15), 155.9 (16), 103.7 (17), 30.3 (18), 175.9 (19), 16.0 (20), 47.9 (1'), 33.2 (2'),
11 25.1 (3'), 25.8 (4'). EIMS: m/z (rel.int.) = 382 (3) $[M-H]^+$, 340 (1) $[M-C_3H_7]^+$, 257 (4) $[M-$
12 $CONHC_6H_{11}]^+$, 141 (56), 123 (27), 91 (39), 81 (50), 55 (100). Elem. Anal. Calcd. for
13 $C_{26}H_{41}NO$: C, 81.39%; H, 10.77%; N, 3.65%. Found: C, 80.97%; H, 10.55%; N, 3.58%.

14 *N*-(cyclohexyl)-*ent*-kaur-9(11),16-dien-19-amide (**7**, 90%): white crystals, mp 70-71 °C;
15 $[\alpha]_D$: + 56° (CH_2Cl_2 , c 0.1); IR (KBr): ν =3388 (N-H), 2950 (C-H), 1650 (C=C), 1650
16 (C=O); 1H NMR (200 MHz, $CDCl_3$): δ 0.97 (s,3H, H-20), 1.11 (s,3H, H-18), 2.69 (br s,1H,
17 H-13), 4.73 (br s,1H, H-17_a), 4.79 (br s,1H, H-17_b), 5.14 (br t, $J=3.22$, 1H, H-11), 3.62-3.77
18 (m, 1H, H-1'), 1.4-1.7 (br s, 1H, H-2_a'), 1.7-1.9 (m, 1H, H-2_b'), 1.2-1.5 (br s, 2H, H-3_a' and
19 H-4_a'), 1.7-1.8 (m, 2H, H-3_b' and H-4_b'), 5.49 (br d, $J=7.24$, 1H, NH). ^{13}C NMR (50 MHz,
20 $CDCl_3$): δ 41.4 (1), 20.6 (2), 38.9 (3), 44.1 (4), 47.9 (5), 19.0 (6), 30.2 (7), 42.3 (8), 158.9
21 (9), 39.0 (10), 115.0 (11), 38.1 (12), 41.4 (13), 45.2 (14), 50.9 (15), 156.3 (16), 105.5 (17),
22 29.7 (18), 176.1 (19), 24.1 (20), 47.6 (1'), 33.2 (2'), 25.8 (3'), 25.0 (4'). EIMS: m/z (rel.int.)
23 = 380 (1) $[M-H]^+$, 366 (1) $[M-CH_3]^+$, 338 (1) $[M-C_3H_7]^+$, 91 (34), 55 (100). Elem. Anal.

1 Calcd. for C₂₆H₃₉NO: C, 81.82%;H, 10.31%; N, 3.67%. Found: C, 81.85%; H, 10.16%; N,
2 3.57%.

3 *N*-(phenyl)-*ent*-kaur-16-en-19-amide (**8**, 69%): white crystals, mp 134-135 °C; [α]_D: - 82°
4 (CH₂Cl₂, c 0.1); IR (KBr): ν=3450 (N-H), 3050, 2900 (C-H), 1650, 1575, 1450 (C=C),
5 1650 (C=O); ¹H NMR (200 MHz, CDCl₃): δ 0.95 (s, 3H, H-20), 1.27 (s, 3H, H-18), 2.62
6 (br s, 1H, H-13), 4.74 (br s, 1H, H-17_a), 4.79 (br s, 1H, H-17_b), 7.47 (dl, *J*=7.8, 2H, H-2'),
7 7.31 (br t, *J*=7.8, 2H, H-3'), 7.09 (br t, *J*=7.3, 1H, H-4'), 7.25 (br s, 1H, NH). ¹³C NMR (50
8 MHz, CDCl₃): δ 41.0 (1), 19.2 (2), 38.3 (3), 44.1 (4), 57.3 (5), 22.5 (6), 41.4 (7), 44.6 (8),
9 55.0 (9), 39.5 (10), 18.4 (11), 32.9 (12), 43.6 (13), 39.6 (14), 48.7 (15), 155.5 (16), 103.1
10 (17), 29.6 (18), 175.1 (19), 15.7 (20), 137.9 (1'), 120.1 (2'), 128.9 (3'), 124.0 (4'). EIMS:
11 *m/z*(rel.int.) = 376 (3) [M-H]⁺, 334 (1) [M-C₃H₇]⁺, 285 (3) [M-NHC₆H₅]⁺, 257 (16) [M-
12 CONHC₆H₅]⁺, 93 (100), 81 (58). Elem. Anal. Calcd. for C₂₆H₃₅NO: C, 82.69%; H, 9.35%;
13 N, 3.71%. Found: C, 82.61%; H, 8.98%; N, 3.65%.

14 *N*-(phenyl)-*ent*-kaur-9(11),16-dien-19-amide (**9**, 74%): white crystals, mp 137-138 °C;
15 [α]_D: + 10° (CH₂Cl₂, c 0.1); IR (KBr): ν= 3450 (N-H), 3050, 2950 (C-H), 1650, 1600, 1450
16 (C=C), 1650 (C=O); ¹H NMR (200 MHz, CDCl₃): δ 1.00 (s, 3H, H-20), 1.23 (s, 3H, H-18),
17 2.68 (br s, 1H, H-13), 4.72 (br s, 1H, H-17_a), 4.84 (br s, 1H, H-17_b), 5.16 (br t, *J*=3.23, 1H,
18 H-11), 7.39 (dl, *J*=7.9, 2H, H-2'), 7.22 (br t, *J*=7.5, 2H, H-3'), 7.00 (br t, *J*=7.3, 1H, H-4'),
19 7.33 (br s, 1H, NH). ¹³C NMR (50 MHz, CDCl₃): δ 41.3 (1), 20.6 (2), 39.0 (3), 45.1 (4),
20 47.8 (5), 18.6 (6), 30.2 (7), 42.2 (8), 158.6 (9), 38.5 (10), 115.6 (11), 38.0 (12), 41.4 (13),
21 45.2 (14), 50.9 (15), 156.3 (16), 106.9 (17), 29.4 (18), 175.6 (19), 24.1 (20), 138.4 (1'),
22 121.0 (2'), 129.3 (3'), 124.6 (4'). EIMS: *m/z*(rel.int.) = 175 (2), 91 (60), 70 (68), 56 (100).

1 Elem. Anal. Calcd. for $C_{26}H_{33}NO$: C, 83.14%; H, 8.86%; N, 3.73%. Found: C, 82.88%; H,
2 8.66%; N, 3.67%.

3 *N-morpholine-ent-kaur-16-en-19-amide* (**10**, 90%): white crystals, mp 69-73°C; $[\alpha]_D$: -
4 113° (CH_2Cl_2 , c 0.1); IR (KBr): ν = 2950 (C-H), 1650 (C=C), 1650 (C=O); 1H NMR (200
5 MHz, $CDCl_3$): δ 0.96 (s, 3H, H-20), 1.26 (s, 3H, H-18), 2.63 (br s, 1H, H-13), 4.72 (br s,
6 1H, H-17_a), 4.78 (br s, 1H, H-17_b), 3.48-3.65 (m, 4H, H-1'), 3.48-3.65 (m, 4H, H-2'). ^{13}C
7 NMR (50 MHz, $CDCl_3$): δ 41.8 (1), 20.2 (2), 39.7 (3), 46.3 (4), 61.4 (5), 23.1 (6), 42.3 (7),
8 44.5 (8), 56.4 (9), 40.3 (10), 18.6 (11), 33.3 (12), 44.1 (13), 40.2 (14), 49.1 (15), 156.2 (16),
9 103.0 (17), 28.1 (18), 177.0 (19), 18.2 (20), 46.9 (1'), 67.1 (2'). EIMS: m/z (rel.int.) = 370
10 (7) $[M-H]^+$, 328 (4) $[M-C_3H_7]^+$, 257 (82) $[M-CONC_4H_8O]^+$, 156 (63), 97 (91), 87 (100), 69
11 (78). Elem. Anal. Calcd. for $C_{24}H_{37}NO_2$: C, 77.56%; H, 10.04%; N, 3.77%. Found: C,
12 77.43%; H, 9.96%; N, 3.64%.

13 *N-morpholine-ent-kaur-9(11),16-dien-19-amide* (**11**, 91%): white crystals, mp 134-135°C;
14 $[\alpha]_D$: + 39° (CH_2Cl_2 , c 0.1); IR (KBr): ν = 2950 (C-H), 1650 (C=C), 1650 (C=O); 1H NMR
15 (200 MHz, $CDCl_3$): δ 1.18 (s, 3H, H-20), 1.32 (s, 3H, H-18), 2.77 (br s, 1H, H-13), 4.78 (br
16 s, 1H, H-17_a), 4.91 (br s, 1H, H-17_b), 5.14 (br t, $J=3.11$, 1H, H-11), 3.55-3.66 (m, 4H, H-
17 1'), 3.55-3.66 (m, 4H, H-2'). ^{13}C NMR (50 MHz, $CDCl_3$): δ 41.6 (1), 20.9 (2), 39.1 (3),
18 46.8 (4), 50.4 (5), 19.6 (6), 30.0 (7), 42.6 (8), 158.9 (9), 39.6 (10), 113.7 (11), 38.1 (12),
19 41.7 (13), 44.8 (14), 50.6 (15), 157.8 (16), 105.2 (17), 28.1 (18), 175.1 (19), 27.1 (20), 46.6
20 (1'), 67.2 (2'). EIMS: m/z (rel.int.) = 368 (8) $[M-H]^+$, 354 (2) $[M-CH_3]^+$, 326 (3) $[M-C_3H_7]^+$,
21 255 (32) $[M-CONC_4H_8O]^+$, 239 (28), 173 (84), 156 (84), 91 (100), 70 (75). Elem. Anal.
22 Calcd. for $C_{24}H_{35}NO_2$: C, 77.99%; H, 9.55%; N, 3.79%. Found: C, 78.03%; H, 9.42%; N,
23 3.76%.

1 *N*-piperazine-ent-kaur-16-en-19-amide (**12**, 69%): white crystals, mp 110-112 °C; $[\alpha]_D$: -
2 28° (CHCl₃, c 0.1); IR (KBr): ν = 3450 (N-H), 2950 (C-H), 1650 (C=C), 1650 (C=O); ¹H
3 NMR (200 MHz, CDCl₃): δ 0.95 (s, 3H, H-20), 1.26 (s, 3H, H-18), 2.63 (br s, 1H, H-13),
4 4.72 (br s, 1H, H-17_a), 4.78 (br s, 1H, H-17_b), 3.57-3.59 (m, 4H, H-1'), 2.87 (br s, 4H, H-
5 2'). ¹³C NMR (50 MHz, CDCl₃): δ 41.9 (1), 20.2 (2), 39.7 (3), 46.2 (4), 61.6 (5), 23.1 (6),
6 42.3 (7), 44.6 (8), 56.4 (9), 40.2 (10), 18.6 (11), 33.3 (12), 44.0 (13), 40.4 (14), 49.1 (15),
7 156.3 (16), 102.9 (17), 28.1 (18), 176.9 (19), 18.3 (20), 46.3 (1'), 47.3 (2'). EIMS:
8 m/z (rel.int.) = 369 (3) [M-H]⁺, 355 (1) [M-CH₃]⁺, 327 (1) [M-C₃H₇]⁺, 257 (8) [M-
9 CONC₄H₈NH]⁺, 241 (3), 91 (41), 69 (100). Elem. Anal. Calcd. for C₂₄H₃₈N₂O: C, 77.78%;
10 H, 10.34%; N, 7.56%. Found: C, 77.69%; H, 10.21%; N, 7.48%.

11 *N*-piperazine-ent-kaur-9(11),16-dien-19-amide (**13**, 80%): white crystals, mp 113-116 °C;
12 $[\alpha]_D$: +29,3° (CHCl₃, c 0.1); IR (KBr): ν = 3400 (N-H), 2950 (C-H), 1650 (C=C), 1650
13 (C=O); ¹H NMR (200 MHz, CDCl₃): δ 1.15 (s, 3H, H-20), 1.32 (s, 3H, H-18), 2.77 (br s,
14 1H, H-13), 4.77 (br s, 1H, H-17_a), 4.90 (br s, 1H, H-17_b), 5.23 (br t, J =3.2, 1H, H-11), 4.09
15 (br s, 4H, H-1'), 3.00 (br s, 4H, H-2'). ¹³C NMR (50 MHz, CDCl₃): δ 41.4 (1), 20.9 (2),
16 39.0 (3), 46.7 (4), 50.3 (5), 19.8 (6), 29.9 (7), 42.5 (8), 158.7 (9), 39.5 (10), 113.8 (11), 37.9
17 (12), 41.5 (13), 44.9 (14), 50.4 (15), 157.5 (16), 105.2 (17), 27.0 (18), 175.0 (19), 27.7 (20),
18 44.7 (1'), 44.7 (2'). EIMS: m/z (rel.int.) = 367 (4) [M-H]⁺, 325 (1) [M-C₃H₇]⁺, 255 (7) [M-
19 CONC₄H₈NH]⁺, 91 (59), 85 (100), 56 (81). Elem. Anal. Calcd. for C₂₄H₃₆N₂O: C, 78.20%;
20 H, 9.85%; N, 7.60%. Found: C, 78.01%; H, 9.76%; N, 7.58%.

21 *N*-(ethyl-2-amine)-ent-kaur-16-en-19-amide (**14**, 78%): white crystals, mp 220-224 °C;
22 $[\alpha]_D$: - 48° (CH₃OH, c 0.1); IR (KBr): ν = 3450 (N-H), 2950 (C-H), 1650 (C=C), 1650
23 (C=O); ¹H NMR (200 MHz, CD₃OD): δ 0.95 (s, 3H, H-20), 1.21 (s, 3H, H-18), 2.64 (br s,

1 1H, H-13), 4.76 (br s, 1H, H-17_a), 4.82 (br s, 1H, H-17_b), 3.48 (q, $J=5.11$ H-1'), 3.06 (br t,
2 $J=6.40$, 2H, H-2'), 7.66 (br t, $J=5.11$ Hz, 1H, NH). ¹³C NMR (50 MHz, CD₃OD): δ 42.3 (1),
3 20.6 (2), 38.8 (3), 45.1 (4), 59.0 (5), 23.5 (6), 42.8 (7), 45.5 (8), 56.6 (9), 40.9 (10), 19.6
4 (11), 34.3 (12), 45.3 (13), 38.8 (14), 50.1 (15), 156.8 (16), 103.8 (17), 30.3 (18), 181.4 (19),
5 16.7 (20), 38.7 (1'), 40.8 (2'). ESIMS: $m/z(\text{rel.int.}) = 345$ (92) [M+H]⁺, 328 (100) [M-
6 NH₃+H]⁺, 257 (78) [M-HCONC₂H₄NH₂+H]⁺. Elem. Anal. Calcd. for C₂₂H₃₆N₂O: C, 76.68
7 %; H, 10.54%; N, 8.13 %. Found: C, 76.57%; H, 10.44%; N, 8.04%.

8 *N*-(ethyl-2-amine)-ent-kaur-9(11),16-dien-19-amide (**15**, 86%): white crystals, mp 232-235
9 °C; [α]_D: + 30° (CH₃OH, c 0.1); IR (KBr): ν= 3450 (N-H), 2950 (C-H), 1650 (C=C), 1650
10 (C=O); ¹H NMR (200 MHz, CD₃OD): δ 23 0.99 (s, 3H, H-20), 1.19 (s, 3H, H-18), 2.71 (br
11 s, 1H, H-13), 4.74 (br s, 1H, H-17_a), 5.23 (br s, 1H, H-11), 3.38-3.46 (m, 2H, H-1'), 3.03
12 (br t, $J=6.1$ Hz, 2H, H-2'), 7.69 (br t, $J=5.11$, 1H, NH). ¹³C NMR (50 MHz, CD₃OD): δ 39.5
13 (1), 21.6 (2), 39.1 (3), 45.5 (4), 48.7 (5), 20.1 (6), 31.2 (7), 43.4 (8), 159.5 (9), 40.0 (10),
14 116.2 (11), 38.6 (12), 42.6 (13), 46.3 (14), 51.6 (15), 157.5 (16), 106.2 (17), 29.6 (18),
15 181.3 (19), 22.7 (20), 38.4 (1'), 41.1 (2'). ESIMS: $m/z(\text{rel.int.}) = 343$ (22) [M+H]⁺, 326
16 (58) [M-NH₃+H]⁺, 255 (35) [M-HCONC₂H₄NH₂+H]⁺, 185 (57), 173 (100). Elem. Anal.
17 Calcd. for C₂₂H₃₄N₂O: C, 77.13%; H, 10.01%; N, 8.18%. Found: C, 77.05%; H, 9.98%; N,
18 8.16%.

19 *N*-(propyl-3-amine)-ent-kaur-16-en-19-amide (**16**, 73%): white crystals, mp 205-209 °C;
20 [α]_D: - 41° (CH₃OH, c 0.1); IR (KBr): ν= 3450 (N-H), ν=2950 (C-H), 1650 (C=C), 1650
21 (C=O); ¹H NMR (200 MHz, CD₃OD): δ 24 0.91 (s, 3H, H-20), 1.15 (s. 3H, H-18), 2.58 (br
22 s, 1H, H-13), 4.70 (br s, 1H, H-17_a), 4.76 (br s, 1H, H-17_b), 3.22-3.45 (m, 2H, H-1'), 1.0-
23 1.2 (m. 1H, H-2_a'), 1.7-2.0 (m. 1H, H-2_b'), 2.87-2.84 (m, 2H, H-3'). ¹³C NMR (50 MHz,

1 CD₃OD): δ 42.3 (1), 20.6 (2), 38.4 (3), 45.1 (4), 59.1 (5), 23.6 (6), 42.8 (7), 45.5 (8), 56.6
2 (9), 40.9 (10), 19.6 (11), 34.3 (12), 45.3 (13), 38.9 (14), 50.2 (15), 156.8 (16), 103.9 (17),
3 30.6 (18), 180.8 (19), 16.9 (20), 40.8 (1'), 28.7 (2'), 38.4 (3'). ESIMS: $m/z(\text{rel.int.}) = 359$
4 (100) $[\text{M}+\text{H}]^+$, 342 (74) $[\text{M}-\text{NH}_3+\text{H}]^+$, 257 (36) $[\text{M}-\text{HCONC}_3\text{H}_6\text{NH}_2+\text{H}]^+$. Elem. Anal.
5 Calcd. for C₂₃H₃₈N₂O: C, 77.03%; H, 10.69%; N, 7.82%. Found: C, 77.12%; H, 10.59%;
6 N, 7.68%.

7 *N*-(propyl-3-amine)-ent-kaur-9(11),16-dien-19-amide (**17**, 68%): white crystals, mp 216-
8 220 °C; $[\alpha]_D^{25} + 39^\circ$ (CH₃OH, c 0.1); IR (KBr): $\nu = 3450$ (N-H), 2950 (C-H), 1650 (C=C),
9 1650 (C=O); ¹H NMR (200 MHz, CD₃OD): δ 0.98 (s, 3H, H-20), 1.23 (s, 3H, H-18), 4.72
10 (br s, 1H, H-17_a), 5.19 (br s, 1H, H-11), 3.10-3.26 (m, 2H, H-1'), 1.5-1.7 (m, 1H, H-2_a'),
11 1.7-2.0 (m, 1H, H-2_b'), 2.87 (br t, $J=7.0\text{Hz}$, 2H, H-3'). ¹³C NMR (50 MHz, CD₃OD): δ
12 40.1 (1), 20.1 (2), 39.6 (3), 45.6 (4), 48.2 (5), 21.6 (6), 31.2 (7), 43.5 (8), 159.5 (9), 39.0
13 (10), 116.2 (11), 38.0 (12), 42.6 (13), 46.3 (14), 51.6 (15), 157.5 (16), 106.2 (17), 29.9 (18),
14 181.0 (19), 25.0 (20), 38.4 (1'), 28.8 (2'), 36.9 (3'). ESIMS: $m/z(\text{rel.int.}) = 357$ (49)
15 $[\text{M}+\text{H}]^+$, 340 (97) $[\text{M}-\text{NH}_3+\text{H}]^+$, 255 (38) $[\text{M}-\text{HCONC}_3\text{H}_6\text{NH}_2+\text{H}]^+$, 185 (54), 173 (100).
16 Elem. Anal. Calcd. for C₂₃H₃₆N₂O: C, 77.47%; H, 10.18%; N, 7.86%. Found: C, 77.33%;
17 H, 10.15%; N, 7.88%.

18 *N*-(butyl-4-amine)-ent-kaur-16-en-19-amide (**18**, 85%): white crystals, mp 237-240 °C;
19 $[\alpha]_D^{25} - 50^\circ$ (CH₃OH, c 0.1); IR (KBr): $\nu = 3450$ (N-H), 2950 (C-H), 1650 (C=C), 1650
20 (C=O); ¹H NMR (200 MHz, CD₃OD): δ 1.0 (s, 3H, H-20), 1.24 (s, 3H, H-18), 2.69 (br s,
21 1H, H-13), 4.81 (br s, 1H, H-17_a), 4.87 (br s, 1H, H-17_b), 3.33 (br t, $J= 6.5\text{Hz}$, 2H, H-1'),
22 1.5-1.8 (m, 2H, H-2'), 1.5-1.8 (m, 2H, H-3'), 3.0 (br t, $J= 6.6\text{Hz}$, 2H, H-4'), 7.52 (br t,
23 $J=5.10\text{Hz}$, 1H, NH). ¹³C NMR (50 MHz, CD₃OD): δ 42.4 (1), 20.7 (2), 38.9 (3), 45.0 (4),

1 59.0 (5), 23.5 (6), 42.8 (7), 45.5 (8), 56.5 (9), 40.5 (10), 19.5 (11), 34.3 (12), 45.2 (13), 39.7
2 (14), 50.1 (15), 156.7 (16), 103.9 (17), 30.5 (18), 179.6 (19), 16.8 (20), 40.5 (1'), 27.3 (2'),
3 25.9 (3'), 39.7 (4'). ESIMS: $m/z(\text{rel.int.}) = 373 (100) [M+H]^+$, 356 (17) $[M-NH_3+H]^+$, 257
4 (61) $[M-HCONC_4H_8NH_2+H]^+$. Elem. Anal. Calcd. for $C_{24}H_{40}N_2O$: C, 77.35%; H, 10.83%;
5 N, 7.52%. Found: C, 77.26%; H, 10.76%; N, 7.49%.

6 *N*-(butyl-4-amine)-ent-kaur-9(11),16-dien-19-amide (**19**, 79%): white crystals, mp 237-240
7 °C; $[\alpha]_D^{25} + 49^\circ$ (CH₃OH, c 0.1); IR (KBr): $\nu = 3450$ (N-H), 2950 (C-H), 1650 (C=C), 1650
8 (C=O); ¹H NMR (200 MHz, CD₃OD): δ 0.98 (s, 3H, H-20), 1.15 (s, 3H, H-18), 4.72 (br s,
9 1H, H-17_a), 5.19 (br s, 1H, H-11), 3.14 (br s, 2H, H-1'), 1.4-1.7 (m, 2H, H-2'), 1.4-1.7 (m,
10 2H, H-3'), 2.91 (br t, $J=7.0\text{Hz}$, 2H, H-4'), 7.47 (br s, 1H, NH). ¹³C NMR (50 MHz,
11 CD₃OD): δ 40.9 (1), 21.6 (2), 39.6 (3), 45.5 (4), 48.7 (5), 20.1 (6), 31.3 (7), 43.5 (8), 159.6
12 (9), 40.1 (10), 116.2 (11), 39.0 (12), 42.7 (13), 46.4 (14), 51.6 (15), 157.5 (16), 106.2 (17),
13 29.8 (18), 180.0 (19), 25.0 (20), 40.5 (1'), 27.3 (2'), 26.1 (3'), 40.5 (4'). ESIMS:
14 $m/z(\text{rel.int.}) = 371 (100) [M+H]^+$, 354 (16) $[M-NH_3+H]^+$, 255 (59) $[M-$
15 $HCONC_4H_8NH_2+H]^+$, 185 (39), 173 (98). Elem. Anal. Calcd. for $C_{24}H_{38}N_2O$: C, 77.77%;
16 H, 10.34%; N, 7.56%. Found: C, 77.68%; H, 10.21%; N, 7.46%.

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