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Synthesis and Some Transformations of 2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]-ethylamine

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Abstract—The condensation of 2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethylamine with aromatic aldehydes followed by reduction gave rise to secondary amines of tetrahydropyrane series. Reactions of the obtained amines with acetyl chloride, succinic and phthalic anhydrides resulted in the corresponding acetamides, succinimide, and phthalimide.

Keywords: acylation, reduction, decarbethoxylation, amines, tetrahydropyran

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In this work the synthesis of new derivatives of 4-aryl-substituted secondary amines of tetrahydropyran series was performed.

Reaction of isoamylmagnesium bromide with ethyl cyano(2-isopropyltetrahydropyran-4-ylidene)acetate **I** [1] gave rise to ethyl cyano[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]acetate **II**. Decarbethoxylation of the latter resulted in [2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]acetonitrile **III**. Reduction of **III** with lithium aluminum hydride yielded 2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethylamine **IV**. The condensation of amine **IV** with a variety of aromatic aldehydes afforded azomethine **A**, which was reduced with sodium borohydride to form secondary amines **V**–**XI**. The latter were converted into acetamides **XII**–**XV**, succinimide **XVI**, and phtalimide **XVII** (Scheme 1).

Ethyl cyano(2-isopropyltetrahydropyran-4-ylidene) acetate **I** was prepared by procedure in [1].

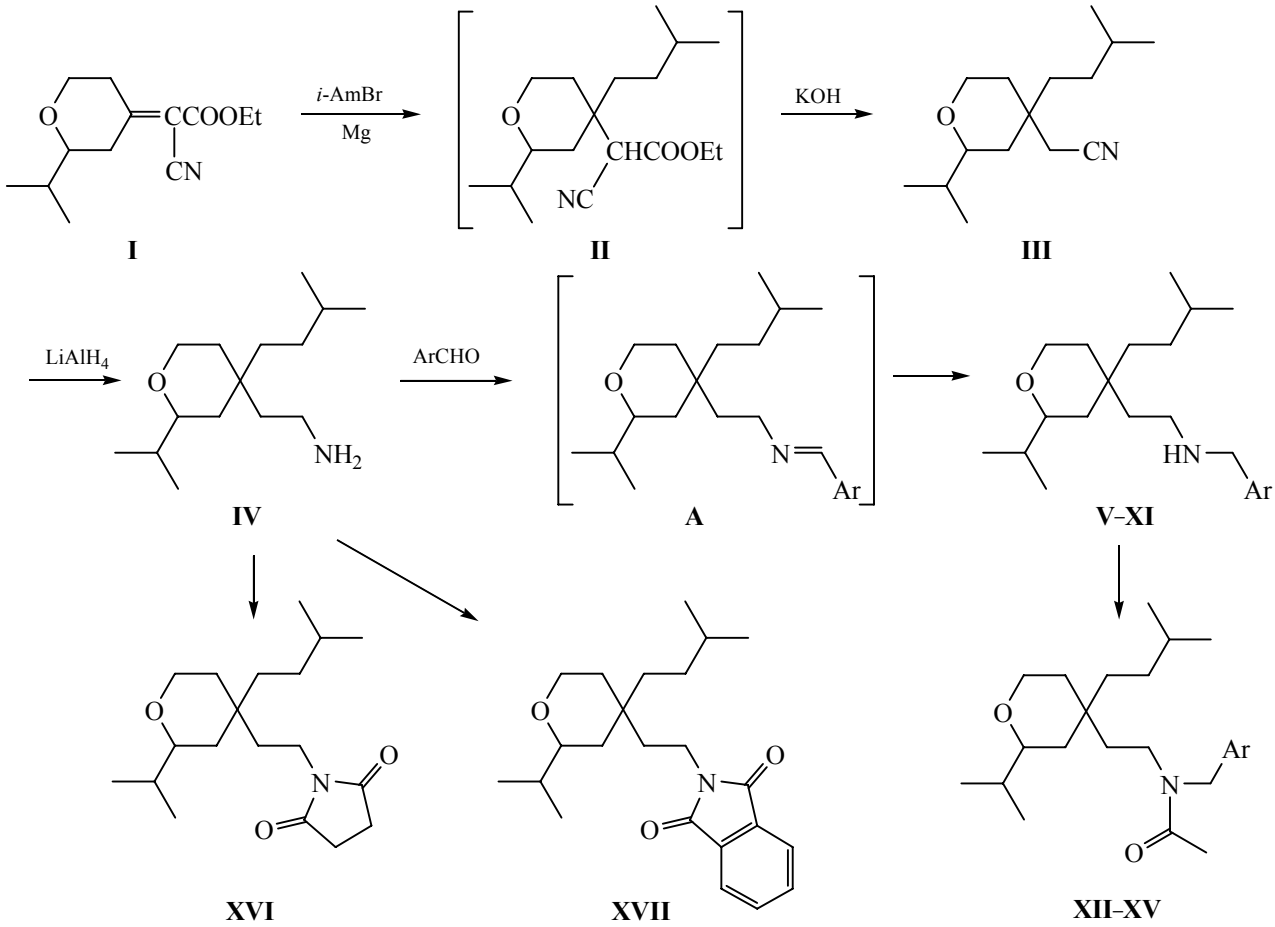
EXPERIMENTAL

IR spectra were recorded on a Nicolet Avatar 330 FT-IR spectrophotometer. ^{1}H NMR spectra were obtained on a Mercury VX-300 spectrometer (300.08 MHz) in DMSO-d_6–CCl_4 solution, internal reference TMS.

Ethyl 2-cyano-2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]acetate (II). To an etherl solution of the Grignard reagent, prepared from 24 g (1 mol) of magnesium turnings and 160 g (1.06 mol) of isoamyl bromide in 350 mL of ahydrous ether was added with stirring a solution of 111.6 g (0.5 mol) of compound **I** in 200 mL of benzene under reflux. The reaction mixture was stirred at 42–44°C for 2.5 h. Then the mixture was cooled, acidified with 20% HCl, extracted with ether, washed with water, and dried. After distilling off the solvents the residue (115.9 g, 75%) was decarbethoxylated.

[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]acetonitrile (III). A solution of 40.4 g (0.72 mol) of potassium hydroxide in 215 mL of ethylene glycol, prepared under heating, was added to 111.4 g (0.36 mol) of cyanoester **II**. The mixture was refluxed for 3 h. After cooling the mixture was diluted with 215 mL of water, extracted with diethyl ether, washed with water, and dried. Then diethyl ether was removed, and the residue was distilled at a reduced pressure. Yield 60.7 g (71%), bp 128–130°C (3 mmHg). IR spectrum, ν, cm^{-1}: 2250 (CN). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.86–0.93 m (6H, 2CH_3, *i*-Pr), 0.93 d (6H, 2CH_3, *i*-Am, *J* 6.6), 1.05–1.21 m and 1.35–1.86 m (10H, CH_2CH_2CH, CH), 2.50–2.61 m (2H, CH_2CN), 3.03

Scheme 1.



Ar = C_6H_5 (**V**, **XII**); 4-$MeOC_6H_4$ (**VI**, **XIII**); 4-$Me_2NC_6H_4$ (**VII**); 4-*i*-$ProC_6H_4$ (**VIII**); 3,4-$(MeO)_2C_6H_3$ (**IX**, **XIV**); (3-MeO), (4-EtO)C_6H_3 (**X**); 2-furyl (**XI**, **XV**).

d.d.d (1H, OCH, *J* 11.6, 5.9, 1.8), 3.41–3.57 m (1H, OCH_2), 3.65–3.81 m (1H, OCH_2). Found, %: C 75.69; H 11.60; N 6.13. $C_{15}H_{27}NO$. Calculated, %: C 75.90; H 11.46; N 5.90.

2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethylamine (IV). To a cooled solution of 18 g (0.48 mol) of $LiAlH_4$ in 250 mL of anhydrous ether was added dropwise an ether solution of 57 g (0.24 mol) of nitrile **III**, maintaining the reaction temperature in the range of 0±2°C. Then 18 mL of water, 18 mL of 15% NaOH, and 54 mL of water was sequentially added dropwise. The reaction mixture was filtered. The inorganic precipitate was washed with diethyl ether. The combined ether solution was dried and evaporated. The residue was distilled in a vacuum. Yield 52.7 g (91%), bp 103–108°C (2 mmHg). IR spectrum, ν, cm^{-1}: 3360, 3290 (NH_2). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.87–0.91 d. d (6H, $CHCH\underline{Me}_2$, *J* 6.8), 0.90 d (6H, $CH_2CH\underline{Me}_2$, *J* 6.6), 0.96–1.64 m (14H, 3,5-CH_2, $2Me_2\underline{CH}$, $\underline{CH_2}CH_2Pr$-*i*, $\underline{CH_2}CH_2\underline{NH_2}$), 2.62 t (2H, $\underline{CH_2}NH_2$, *J* 8.3), 3.13 d.d.d (1H, OCH, *J* 11.5, 6.1, 1.8), 3.59 d.d.d (1H, OCH_2, *J* 11.6, 11.2, 3.9), 3.77 d.d.d (1H, OCH_2, *J* 11.6, 4.5, 2.0). ^{13}C NMR spectrum ($CDCl_3$), δ_C, ppm: 18.6 (CH_3), 18.7 (CH_3), 22.9 (CH_3), 28.8 (CH), 31.6 (CH_2), 33.3 (C), 33.3 (CH), 35.5, 36.3, 36.7, 38.7, and 40.2 (CH_2), 63.7 (OCH_2), 77.4 (OCH). Found, %: C 74.75; H 12.81; N 5.94. $C_{15}H_{31}NO$. Calculated, %: C 74.63; H 12.94; N 5.80.

General procedure for preparation of the secondary amines V–XI. A mixture of equimolar amounts of aromatic aldehyde and amine **IV** in benzene was heated for 4 h with a Dean–Stark trap until water separation was completed. Then benzene was removed, and the residue was dissolved in methanol (0.1 mol of azomethine **A** per 40 mL of methanol). To this mixture was added by portions

equimolar amount of $NaBH_4$ with stirring and cooling with ice water; the reaction temperature did not exceed 20°C. Then the reaction mixture was stirred at room temperature for another 1 h. After distilling off methanol, the residue was alkalinized with 20% aqueous NaOH, extracted with ether, dried, and evaporated. The residue was distilled.

Benzyl-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}amine (V). Yield 70%; bp 170–175°C (1 mmHg). IR spectrum, ν, cm^{-1}: 3310 (NH); 1600, 1580 (C=C, Ar). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.87 d (6H, CHCH$\underline{Me}_2$, *J* 6.7), 0.87 d (6H, $CH_2CH\underline{Me}_2$, *J* 6.6), 0.88–1.66 m (13H, 3.5-CH_2, $\underline{CH_2CH_2CH}Me_2$, $CH\underline{CH}Me_2$, NH), 2.45 t (2H, $CH_2\underline{CH_2}N$, *J* 8.0), 3.09 d.d.d (1H, OCH, *J* 11.4, 6.1, 1.5), 3.47–3.59 m (1H, OCH_2), 3.66–3.72 m (1H, OCH_2), 3.72 s (2H, $\underline{CH_2}Ph$), 7.13–7.30 m (5H, C_6H_5). Found, %: C 79.84; H 11.18; N 4.33. $C_{22}H_{37}NO$. Calculated, %: C 79.70; H 11.25; N 4.22.

{2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}-(4-methoxybenzyl)amine (VI). Yield 71%, bp 195–200°C (2.5 mmHg). IR spectrum, ν, cm^{-1}: 3320 (NH); 1610, 1590 (C=C, Ar). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.87 d (6H, CHCH$\underline{Me}_2$, *J* 6.8), 0.87 d (6H, $CH_2CH\underline{Me}_2$, *J* 6.6), 0.88–1.65 m (13H, 3,5-CH_2, $\underline{CH_2CH_2CH}Me_2$, OCH$\underline{CH}$, $\underline{NHCH_2CH_2}$), 2.43 t (2H, $CH_2\underline{CH_2}N$, *J* 8.0), 3.08 d.d.d (1H, OCH, *J* 11.4, 5.9, 1.5), 3.47–3.72 m (2H, OCH_2), 3.64 s (2H, $\underline{CH_2}C_6H_4$), 3.76 s (3H, OCH_3), 6.77 m and 7.17 m (4H, C_6H_4). Found, %: C 76.60; H 11.00; N 4.04. $C_{23}H_{39}NO_2$. Calculated, %: C 76.40; H 10.87; N 3.87.

[4-({2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethylamino}methyl)phenyl]dimethylamine (VII). Yield 67%, bp 200–205°C (1.5 mmHg). IR spectrum, ν, cm^{-1}: 3306 (NH); 1605, 1582 (C=C, Ar). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.87 d (6H, CHCH$\underline{Me}_2$, *J* 6.8), 0.87 d (6H, $CH_2CH\underline{Me}_2$, *J* 6.6), 1.02–1.18 m (4H, 3,5-CH_2), 1.25–1.68 m (9H, $\underline{CH_2CH_2CH}Me_2$, OCH$\underline{CH}$, $\underline{NHCH_2CH_2}$), 2.43 t (2H, $CH_2\underline{CH_2}N$, *J* 8.0), 2.91 s (6H, N$\underline{Me}_2$), 3.08 d.d.d (1H, OCH, *J* 11.6, 6.1, 1.5), 3.60 s (2H, N$\underline{CH_2}C_6H_4$), 3.52–3.69 m (2H, OCH_2), 6.60 m and 7.08 m (2H and 2H, C_6H_4). Found, %: C 76.77; H 11.11; N 7.30. $C_{24}H_{42}N_2O$. Calculated, %: C 76.95; H 11.30; N 7.48.

(4-Isopropoxybenzyl)-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}amine (VIII). Yield 68%, bp 185–190°C (1.5 mmHg). IR spectrum, ν, cm^{-1}: 3300 (NH); 1600, 1580 (C=C, Ar). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.86 d (6H, CHCH$\underline{Me}_2$, *J* 6.8), 0.87 d (6H, $CH_2CH_2CH\underline{Me}_2$, *J* 6.5), 1.30 d (6H, OCH$\underline{Me}_2$, *J* 6.0), 0.87–1.65 m (13H, 3.5-CH_2, $\underline{CH_2CH_2CH}Me_2$, $\underline{CH_2CH_2}N$, OCH$\underline{CH}$), 2.43 t (2H, $CH_2\underline{CH_2}N$, *J* 8.0), 3.08 d.d.d (1H, OCH, *J* 11.5, 6.1, 1.5), 3.47–3.59 m and 3.61–3.72 m (2H, OCH_2), 3.63 s (2H, N$\underline{CH_2}C_6H_4$), 4.50 septet (1H, O$\underline{CH}Me_2$, *J* 6.0), 6.73 m and 7.14 m (4H, C_6H_4). Found, %: C 77.26; H 11.30; N 3.76. $C_{25}H_{43}NO_2$. Calculated, %: C 77.07; H 11.12; N 3.59.

(3,4-Dimethoxybenzyl)-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}amine (IX). Yield 65% (mixture of two diastereoisomers, 80:20), bp 193–195°C (1 mmHg). IR spectrum, ν, cm^{-1}: 3310 (NH); 1605, 1590 (C=C, Ar). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.86 d (6H, OCHCH$\underline{Me}_2$, *J* 6.8), 0.87 d (6H, $CH_2CH_2CH\underline{Me}_2$, *J* 6.6), 0.90–1.65 m (13H, 3,5-CH_2, $\underline{CH_2CH_2CH}Me_2$, $\underline{CH_2CH_2NH}$, OCH$\underline{CH}$), 2.44 t (2H, $CH_2\underline{CH_2}N$, *J* 8.0), 3.09 d.d.d (1H, OCH, *J* 11.4, 6.0, 1.5), 3.49–3.72 m (2H, OCH_2), 3.63 s (2H, N$\underline{CH_2}$Ar), 3.77 s and 3.80 s (3H and 3H, OCH_3), 6.71–6.77 m and 6.85–6.87 m (3H, C_6H_3). Found, %: C 73.50; H 10.69; N 3.73. $C_{24}H_{41}NO_3$. Calculated, %: C 73.61; H 10.55; N 3.58.

(4-Ethoxy-3-methoxybenzyl)-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}amine (X). Yield 64% (mixture of two diastereoisomers, 65 : 35), bp 210–215°C (2 mmHg). IR spectrum, ν, cm^{-1}: 3305 (NH); 1600, 1560 (C=C, Ar). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.84 d (6H, $CH_2CH_2CH\underline{Me}_2$, *J* 6.8), 0.87 d (6H, CHCH$\underline{Me}_2$, *J* 6.6), 0.88–1.16 m (4H, 3,5-CH_2), 1.40 t (3H, CH_2CH_3, *J* 7.0), 1.26–1.73 m (9H, CH_2CH_2CH, $\underline{CH_2CH_2NH}$, OCH$\underline{CH}$), 2.44 t and 2.55 t (2H, $CH_2\underline{CH_2}N$, *J* 8.1 and 7.2), 3.06–3.13 m (1H, OCH), 3.62 s and 3.63 s (2H, N$\underline{CH_2}$Ar), 3.47–3.72 m (2H, OCH_2), 3.80 s (3H, OCH_3), 3.98 q (2H, O$\underline{CH_2}CH_3$, *J* 7.0), 6.72–6.86 m (3H, C_6H_3). Found, %: C 74.29; H 10.52; N 3.32. $C_{25}H_{43}NO_3$. Calculated, %: C 74.03; H 10.69; N 3.45.

Furan-2-yl-methyl-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}amine (XI). Yield 70%, bp 170–175°C (3 mmHg). IR spectrum, ν, cm^{-1}: 3330 (NH), 1675, 1605 (C=C, furan). ^1H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.84 d and 0.87 d (6H, CHCH$\underline{Me}_2$, *J* 6.7), 0.88 d (6H, $CH_2CH\underline{Me}_2$, *J* 6.7), 0.83–0.97 m and 1.12–1.62 m (12H, CH, CH_2), 1.10 br.s (1H, NH), 2.43 t (2H, $CH_2\underline{CH_2}N$, *J* 8.1), 3.08 d.d.d (1H, OCH, *J* 11.3, 5.9, 2.0), 3.48–3.71 m (2H, OCH_2), 3.68 s (2H, $\underline{CH_2}$-furyl), 6.11 d and 6.26 d. d (2H, OCH=$\underline{CH}$, O$\underline{CH}$=CH-furyl, *J* 3.2, 2.0), 7.32 d

(1H, OC=CH, *J* 2.0). Found, %: C 75.00; H 10.78; N 4.52. $C_{20}H_{35}NO_2$. Calculated, %: C 74.72; H 10.97; N 4.36.

General procedure for preparation of acetamides XII–XV. To a solution of 0.03 mol of amine **V**, **VI**, **IX,** or **XI** and 0.32 mol of triethylamine in 30 mL of anhydrous benzene was added an equimolar amount of acetyl chloride. The mixture was refluxed for 4 h, then cooled, washed with water, dried, extracted with benzene, and evaporated. The residue was distilled.

***N*-Benzyl-*N*-{2-[2-isopropyl-4-(3-methylbutyl)-tetrahydropyran-4-yl]ethyl}acetamide (XII).** Yield 65% (mixture of two diastereoisomers, 50 : 50), bp 185–190°C (1.5 mmHg). IR spectrum, ν, cm^{-1}: 1658 (C=O); 1610, 1600 (C=C, Ar). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.80–0.88 m (12H, CH_3, *i*-Pr), 0.90–1.67 m (12H, CH, 3,5-CH_2, CH_2CH_2CH, $\underline{CH_2}CH_2N$, CH$\underline{CH}Me_2$, $CH_2CH_2\,\underline{CH}$), 2.06 s and 2.08 s (1.5H and 1.5H, $COCH_3$), 2.95–3.15 m (3H, OCH, $CH_2\underline{CH_2}N$), 3.40–3.52 m and 3.60–3.72 m (2H, OCH_2), 4.46 d and 4.54 d (1H, *J* 14.8) and 4.49 s (1H, N$\underline{CH_2}$Ph), 7.16–7.36 m (5H, C_6H_5). Found, %: C 77.28; H 10.39; N 3.48. $C_{24}H_{39}NO_2$. Calculated, %: C 77.16; H 10.52; N 3.75.

***N*-{2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}-*N*-(4-methoxybenzyl)acetamide (XIII).** Yield 63% (mixture of two diastereoisomers, 50 : 50), bp 215°C (1 mmHg). IR spectrum, ν, cm^{-1}: 1665 (C=O); 1600, 1590 (C=C, Ar). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.82–0.88 m (12H, 2CH$\underline{Me_2}$), 0.90–1.68 m (12H, 3,5-CH_2, $\underline{CH_2}CH_2N$, CH_2CH_2CH, CH$\underline{CH}Me_2$), 2.06 s and 2.07 s (3H, $COCH_3$), 2.96–3.26 m (3H, OCH, $CH_2\underline{CH_2}N$), 3.41–3.53 m and 3.58–3.74 m (2H, OCH_2), 3.76 s and 3.78 s (3H, OCH_3), 4.36–4.49 m (2H, N$\underline{CH_2}$Ar), 6.76–6.86 m and 7.06–7.13 m (4H, C_6H_4). Found, %: C 74.22; H 10.45; N 3.62. $C_{25}H_{41}NO_3$. Calculated, %: C 74.40; H 10.24; N 3.47.

***N*-(3,4-Dimethoxybenzyl)-*N*-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}acetamide (XIV).** Yield 58% (mixture of two diastereoisomers, 50 : 50), bp 215–220°C (1 mmHg). IR spectrum, ν, cm^{-1}: 1680 (C=O); 1610, 1590 (C=C, Ar). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.81–0.88 m (12H, 2CH$\underline{Me_2}$), 0.90–1.70 m (12H, 3,5-CH_2, $\underline{CH_2}CH_2N$, CH_2CH_2CH, CH$\underline{CH}Me_2$), 2.06 s (3H, $COCH_3$), 2.96–3.15 m (3H, OCH, $CH_2\underline{CH_2}N$), 3.43–3.54 m and 3.62–3.74 m (2H, OCH_2), 3.77 s and 3.79 s (3H, OCH_3), 4.34–4.46 m (2H, $\underline{CH_2}$Ar), 6.66–6.82 m (3H, C_6H_3). Found, %: C 72.28; H 10.30; N 3.52. $C_{26}H_{43}NO_4$. Calculated, %: C 72.02; H 10.00; N 3.23.

***N*-(Furan-2-yl)methyl-*N*-{2-[2-isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}acetamide (XV).** Yield 66% (mixture of two diastereoisomers, 60 : 40), bp 170–175°C (1 mmHg). IR spectrum, ν, cm^{-1}: 1655 (C=O). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.83–0.91 m (12H, 2CH$\underline{Me_2}$), 0.90–1.66 m (12H, 3,5-CH_2, $\underline{CH_2}CH_2N$, CH_2CH_2CH, $CHCHMe_2$), 2.03 s and 2.12 s (3H, $COCH_3$), 3.03–3.30 m (3H, OCH, $CH_2\underline{CH_2}N$), 3.45–3.55 m and 3.60–3.74 m (2H, OCH_2), 4.34–4.55 m (2H, NCH_2Ar), 6.21–6.26 m (1H, H^3-furyl), 6.30–6.34 m (1H, H^4-furyl), 7.36 m and 7.43 m (1H, H^5-furyl). Found, %: C 72.87; H 10.02; N 3.70. $C_{22}H_{37}NO_3$. Calculated, %: C 72.69; H 10.26; N 3.85.

1-{2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}pyrrolidine-2,5-dione (XVI). A mixture of 4.8 g (0.02 mol) of amine **IV** and 2 g (0.02 mol) of succinic anhydride in 40 mL of benzene was refluxed for 10 h with a Dean–Stark trap until separation of water was completed. Further, benzene was evaporated and the residue was distilled in a vacuum. Yield 4.1 g (65.0%), bp 175–180°C (2 mmHg). IR spectrum, ν, cm^{-1}: 1714 (C=O). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.86 d and 0.88 d (6H, CHCH$\underline{Me_2}$, *J* 6.8), 0.94 d (6H, $CH_2CH\underline{Me_2}$, *J* 6.6), 0.92–1.67 m (12H, 3,5-CH_2, $\underline{CH_2}CH_2N$, CH_2CH_2CH, CH$\underline{CH}Me_2$), 2.62 s (4H, O=CCH_2CH_2C=O), 3.08 d.d.d (1H, OCH, *J* 11.4, 6.1, 1.5), 3.26–3.32 m (2H, NCH_2), 3.47–3.75 m (2H, OCH_2). Found, %: C 70.38; H 10.42; N 4.48. $C_{19}H_{33}NO_3$. Calculated, %: C 70.55; H 10.28; N 4.33.

2-{2-[2-Isopropyl-4-(3-methylbutyl)tetrahydropyran-4-yl]ethyl}isoindole-1,3-dione (XVII) was prepared similarly from 4.8 g (0.02 mol) of amine **IV** and 3 g (0.02 mol) of phthalic anhydride. Yield 4.9 g (66.0%) (mixture of two diastereoisomers, 70 : 30), bp 195–200°C (2 mmHg). IR spectrum, ν, cm^{-1}: 1600, 1610 (C=C, Ar), 1720 (C=O). ^{1}H NMR spectrum (300 MHz), δ, ppm (*J*, Hz): 0.86 d and 0.89 d (3H and 3H, CHCH$\underline{Me_2}$, *J* 6.8), 0.95 d (6H, $CH_2CH\underline{Me_2}$, *J* 6.5), 0.90–1.82 m (12H, 3,5-CH_2, $\underline{CH_2}CH_2N$, CH_2CH_2CH, CH$\underline{CH}Me_2$), 3.11 d.d.d (1H, OCH, *J* 11.3, 6.2, 1.5), 3.49–3.77 m (4H, OCH_2, NCH_2), 7.72–7.84 m (4H, C_6H_4). Found, %: C 74.20; H 9.03; N 3.93. $C_{23}H_{33}NO_3$. Calculated, %: C 74.36; H 8.95; N 3.77.

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