Supplement

Diisopropyl Malonate as Acylating Agent in Kinetic Resolution of Chiral Amines with Lipase B from *Candida antarctica*

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1 General

Materials and synthetic procedures are described in detail in the experimental section of the main article.

2 Characterization of compounds

2.1 Gas chromatography

General details of gas chromatographic methods are described in Section 4.2 of the main article.

Samples (5 µL) from kinetic resolution reactions (described in Section 4.5 of the main article) were diluted with methyl *tert*-butyl ether (500 µL), treated with acetic anhydride (10 µL) at room temperature and 350 rpm for 30 min in a shaker (for derivatization of unreacted amines **1a-d** into *N*-acetamides **1*a-d**) and quenched with one drop of distilled water. After drying over anhydrous Na_2SO_4, the samples were analyzed on chiral column by GC. Representative GC results are shown in Fig. S1–Fig. S13.

2.2 NMR

General details of NMR methods are described in Section 4.2 of the main article. ^{1}H-NMR and ^{13}C-NMR spectra of the products are depicted as Fig. S14–Fig. S31.

Table S1 GC methods, and retention times of acetamides [(*S*)- and (*R*)-**1*a-d**] and amides [(*S*)- and (*R*)-**3a-d**] in quantitative GC analysis on chiral column

Substrate	Temperature program	Retention times[a] [min]			
		(*S*)-**1*a-d**	(*R*)-**1*a-d**	(*S*)-**3a-d**	(*R*)-**3a-d**
(±)-**1a**	160–170 °C, 0.8 °C min^{-1}	2.44	2.49	10.23	10.69
(±)-**1b**	110 °C, 10 min; 110–190 °C, 5 °C min^{-1}	4.84	5.73	21.02	21.77
(±)-**1c**	160–184 °C, 0.8 °C min^{-1}	5.85	5.97	22.28	23.23
(±)-**1d**	130 °C, 60 min; 130–140 °C, 2 °C min^{-1}; 140–190 °C, 10 °C min^{-1}; 190 °C, 20 min	65.89	66.34	85.53	86.13

[a] The acetamides **1*a-d** were prepared by derivatization of the residual amines **1a-d** in the samples from enzymatic reactions with acetic anhydride as described in Section 2.1 of this Supplement.

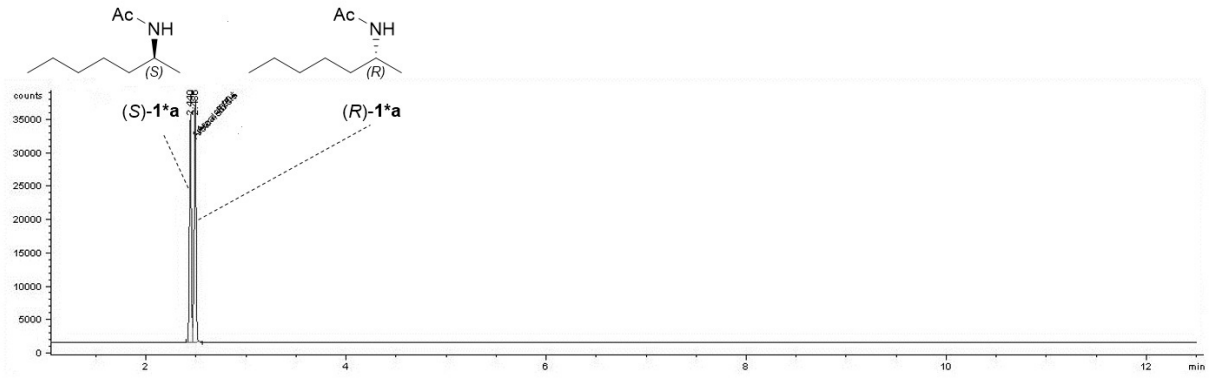

Fig. S1 GC chromatogram of racemic 2-aminoheptane (±)-**1a** after derivatization with Ac_2O

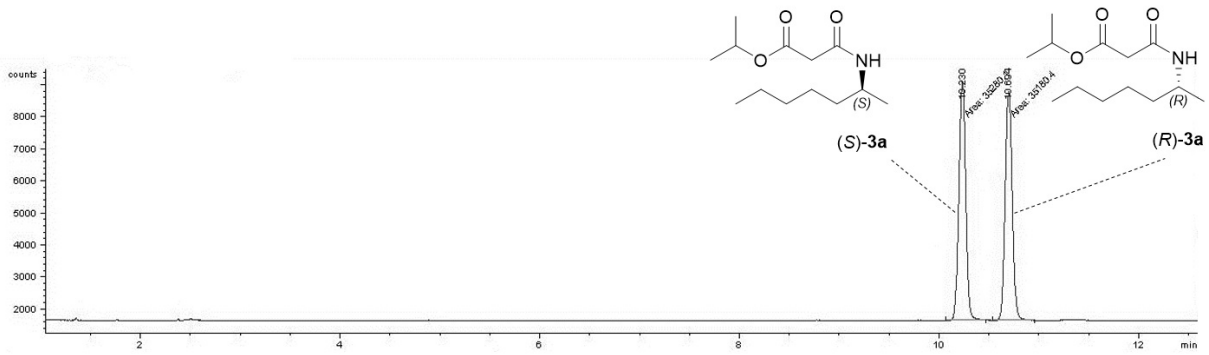

Fig. S2 GC chromatogram of racemic acetamide (±)-**3a** [amide of racemic heptane-2-amine (±)-**1a**]

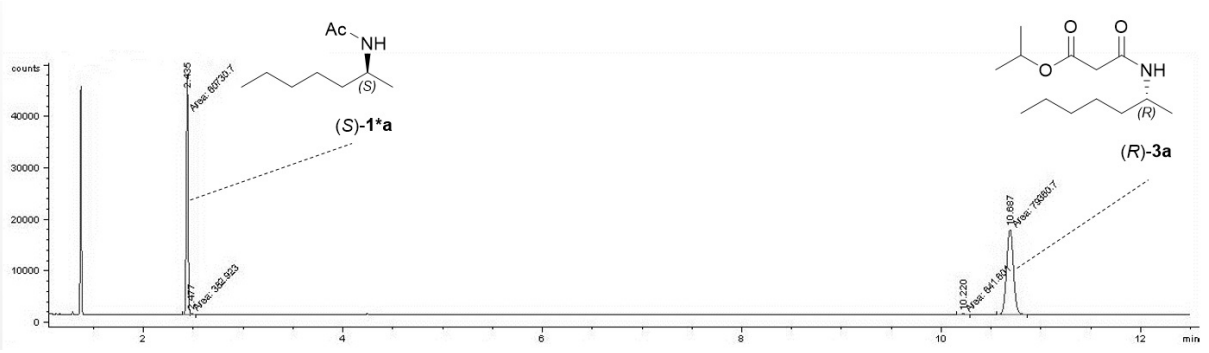

Fig. S3 GC chromatogram of the mixture after CaLB-catalyzed kinetic resolution of racemic heptane-2-amine (±)-**1a** with diisopropyl malonate (**2**) and after derivatization with Ac_2O

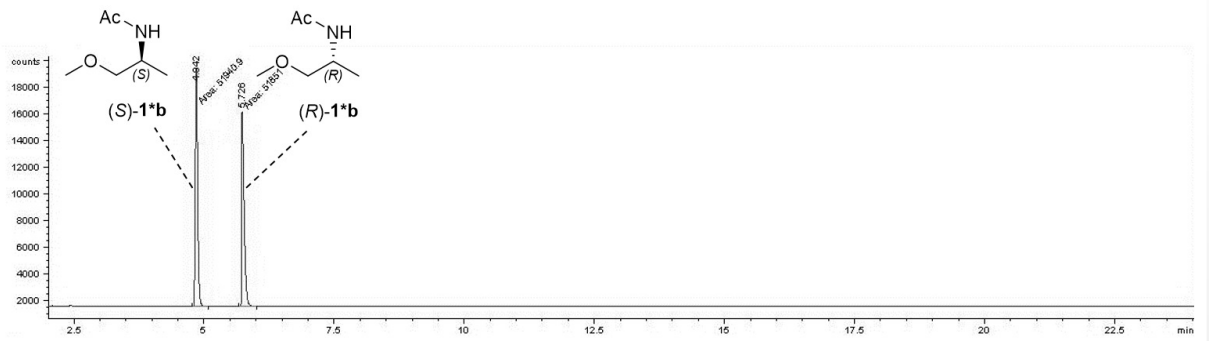

Fig. S4 GC chromatogram of racemic 1-methoxypropane-2-amine (±)-**1b** after derivatization with Ac_2O

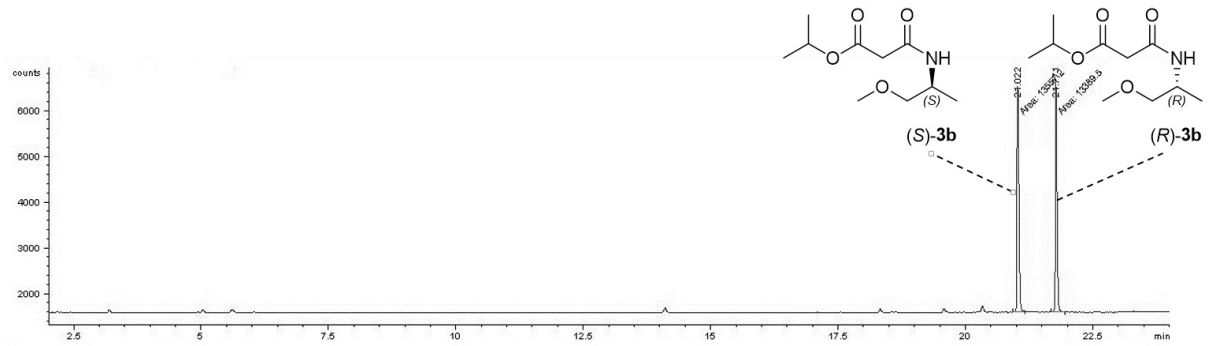

Fig. S5 GC chromatogram of racemic acetamide (±)-**3b** [amide of racemic 1-methoxypropane-2-amine (±)-**1b**]

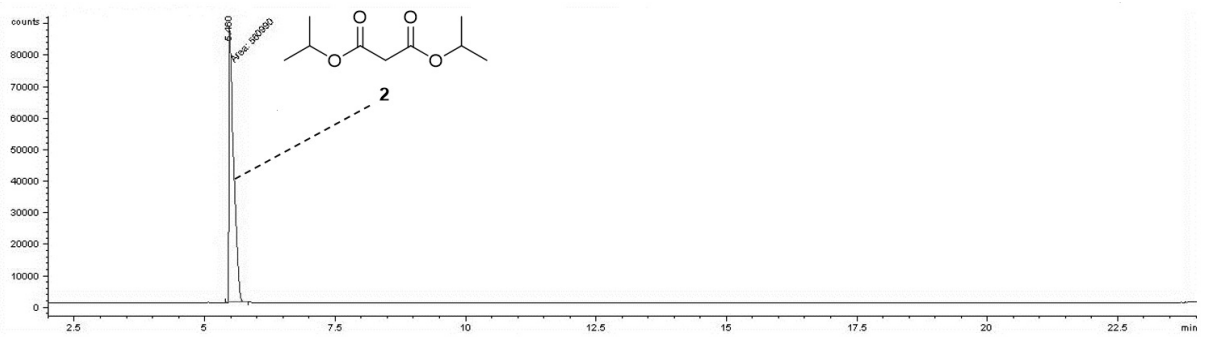

Fig. S6 GC chromatogram of diisopropyl malonate (**2**) used as acylating agent

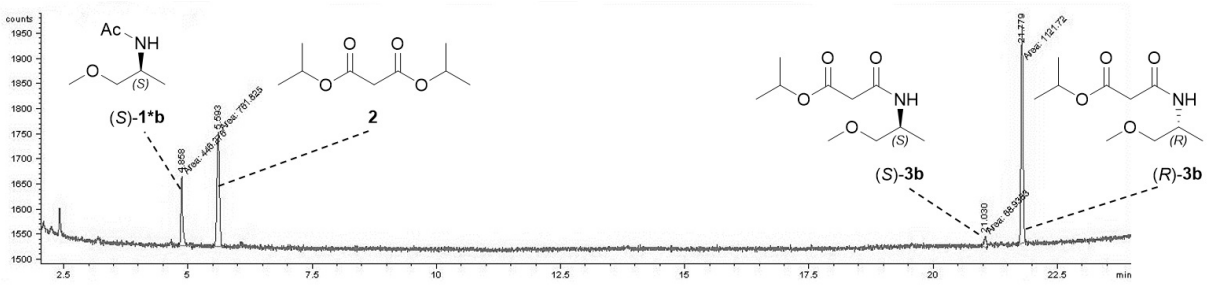

Fig. S7 GC chromatogram of the mixture after CaLB-catalyzed kinetic resolution of racemic 1-methoxypropan-2-amine (±)-**1b** with diisopropyl malonate (**2**) and after derivatization with Ac_2O

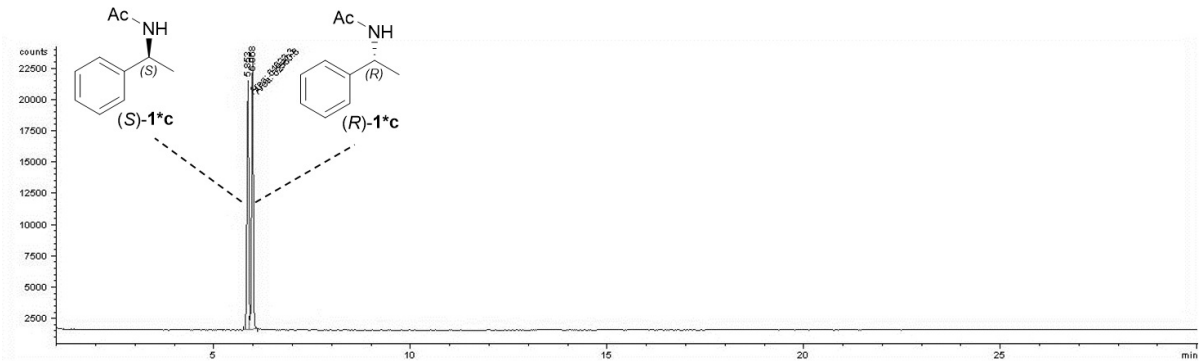

Fig. S8 GC chromatogram of racemic 1-phenylethane-1-amine (±)-**1c** after derivatization with Ac_2O

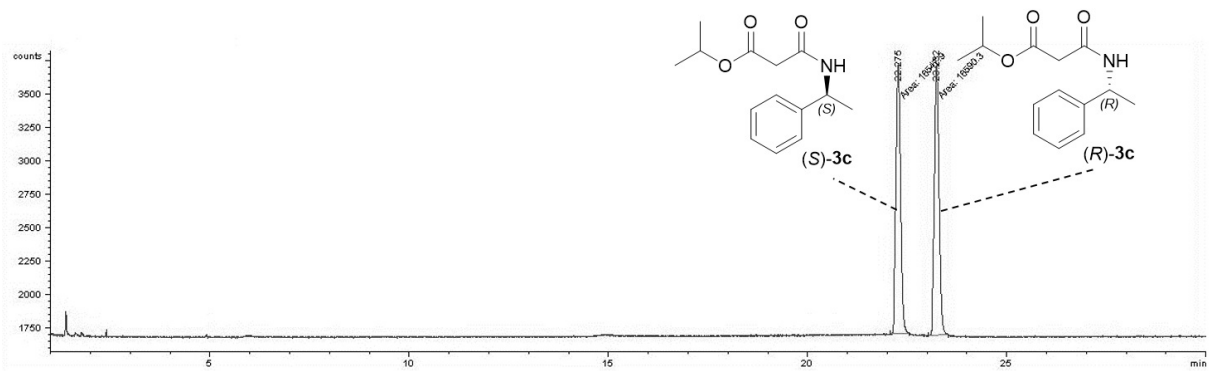

Fig. S9 GC chromatogram of racemic acetamide (±)-**3c** [amide of racemic 1-phenylethane-1-amine (±)-**1c**]

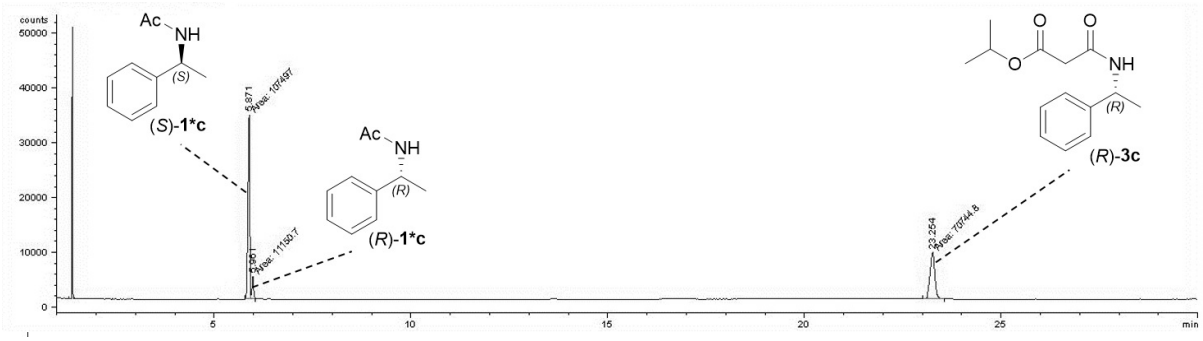

Fig. S10 GC chromatogram of the mixture after CaLB-catalyzed kinetic resolution of racemic 1-phenylethane-1-amine (±)-**1c** with diisopropyl malonate (**2**) and after derivatization with Ac_2O

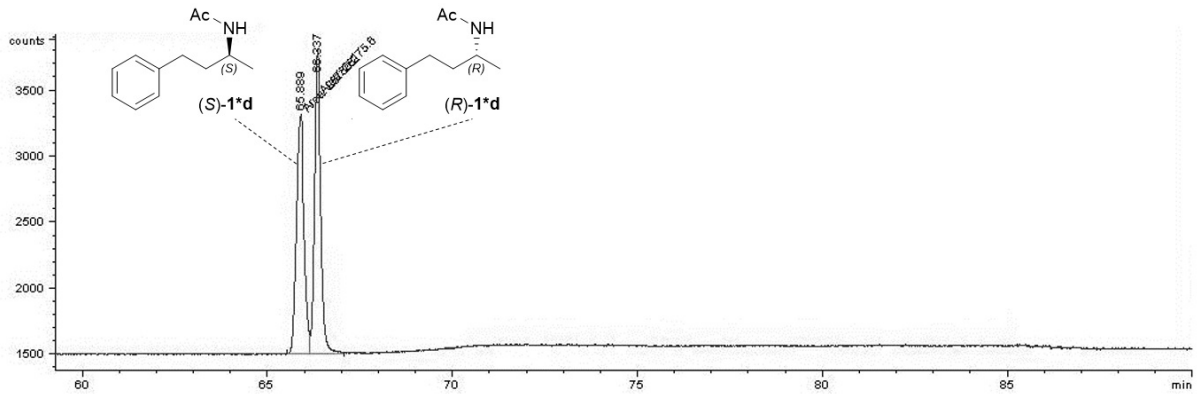

Fig. S11 GC chromatogram of racemic 4-phenylbutan-2-amine (±)-**1d** after derivatization with Ac_2O

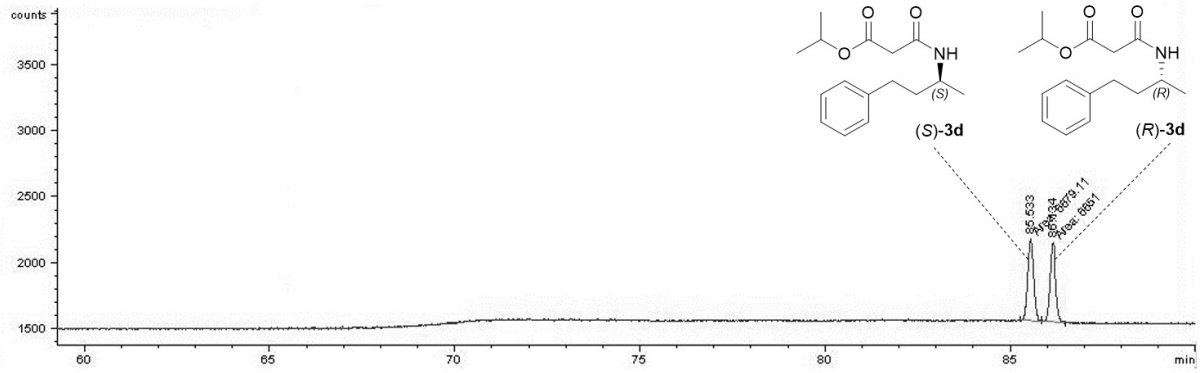

Fig. S12 GC chromatogram of racemic acetamide (±)-**3d** [amide of racemic 4-phenylbutan-2-amine (±)-**1d**]

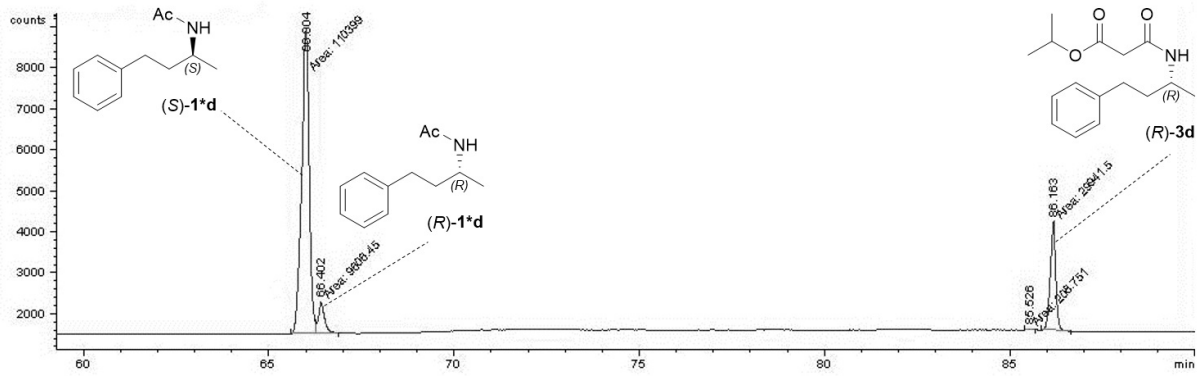

Fig. S13 GC chromatogram of the mixture after CaLB-catalyzed kinetic resolution of racemic 4-phenylbutan-2-amine (±)-**1d** with diisopropyl malonate (**2**) and after derivatization with Ac_2O

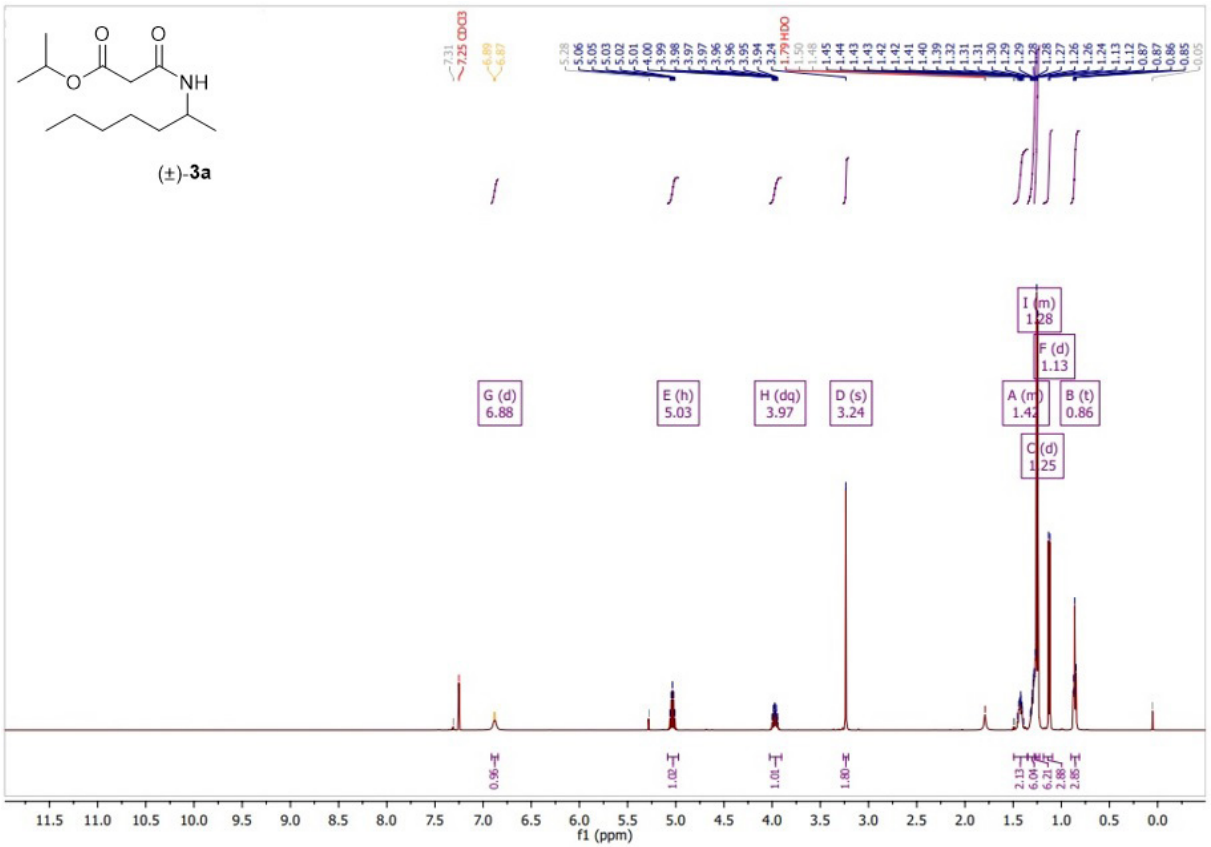

Fig. S14 [1]H-NMR spectrum of racemic isopropyl 3-(heptan-2-ylamino)-3-oxopropanoate (±)-**3a**

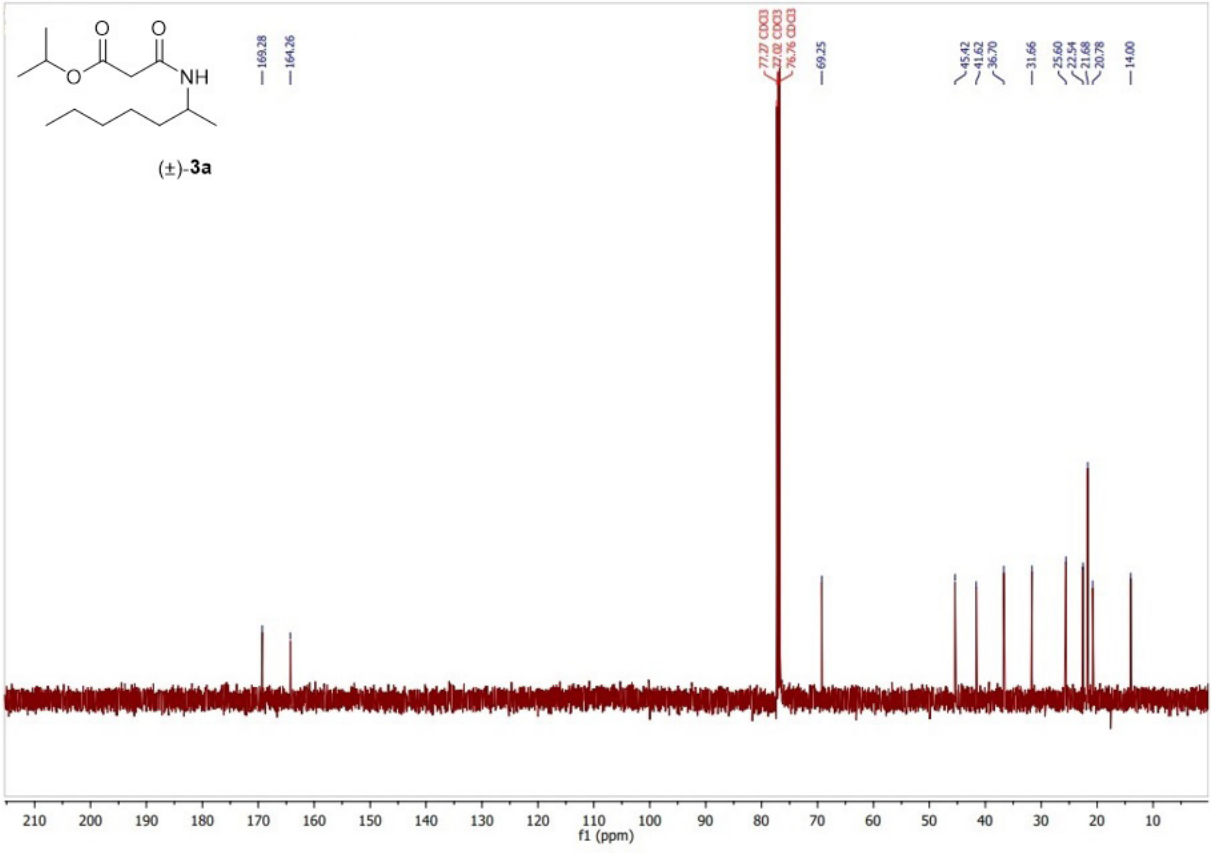

Fig. S15 [13]C-NMR spectrum of racemic isopropyl 3-(heptan-2-ylamino)-3-oxopropanoate (±)-**3a**

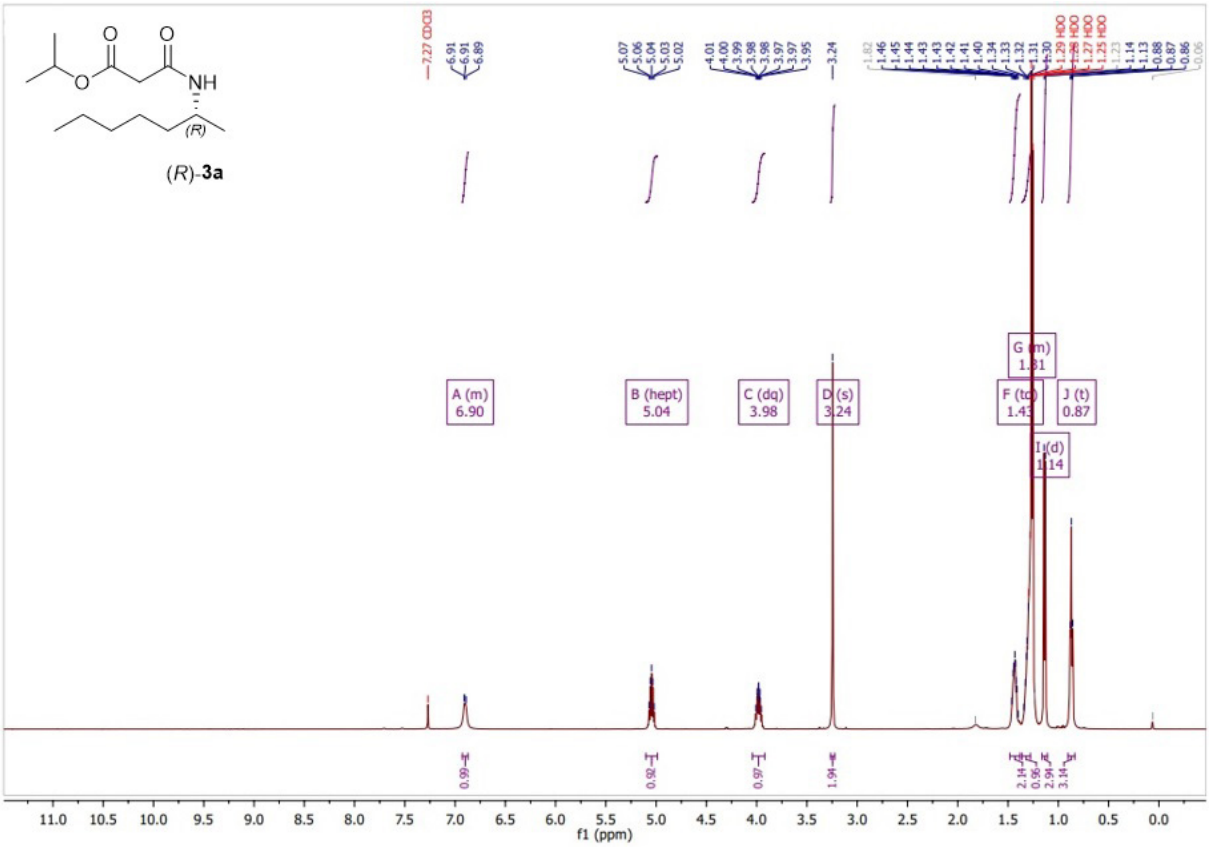

Fig. S16 [1]H-NMR spectrum of isopropyl (*R*)-3-(heptan-2-ylamino)-3-oxopropanoate (*R*)-**3a**

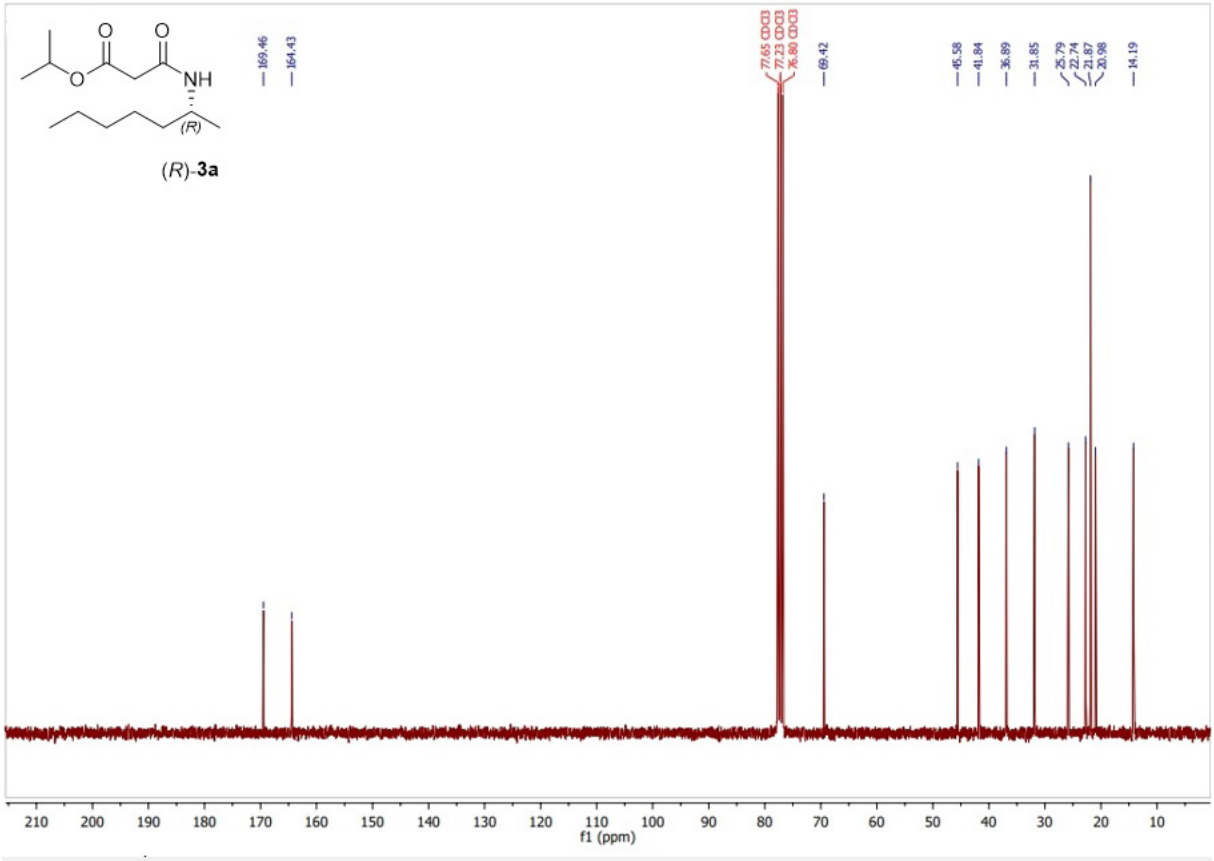

Fig. S17 [1]H-NMR spectrum of isopropyl (*R*)-3-(heptan-2-ylamino)-3-oxopropanoate (*R*)-**3a**

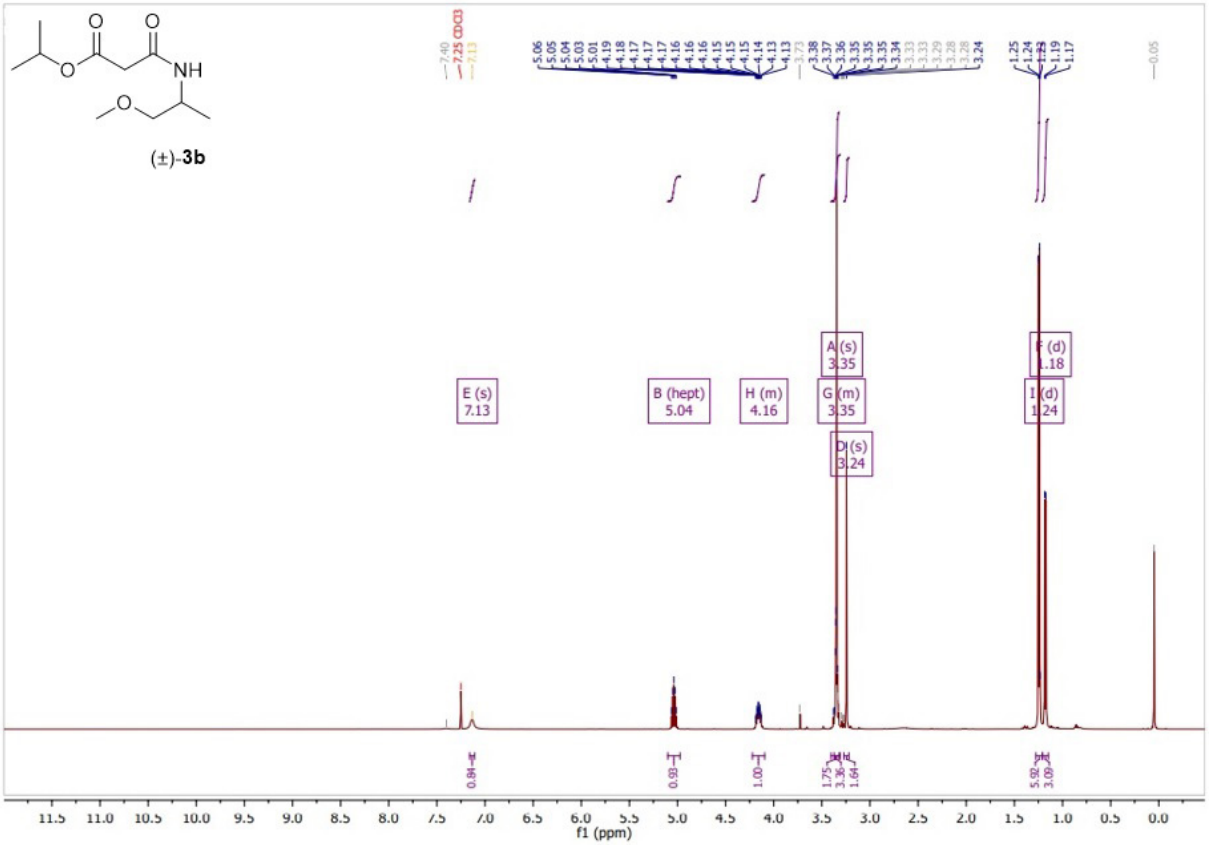

Fig. S18 [1]H-NMR spectrum of racemic isopropyl 3-[(1-methoxypropan-2-yl)amino]-3-oxopropanoate (±)-**3b**

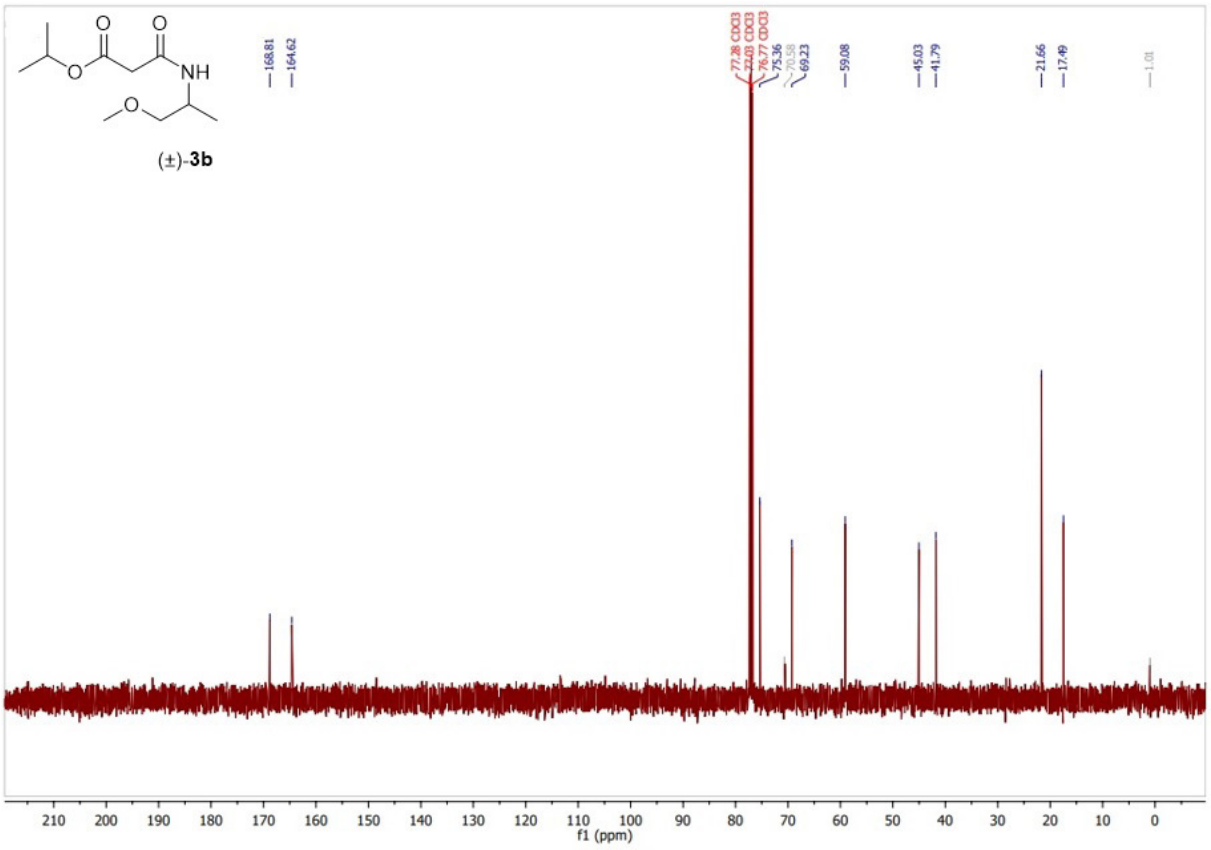

Fig. S19 [13]C-NMR spectrum of racemic isopropyl 3-[(1-methoxypropan-2-yl)amino]-3-oxopropanoate (±)-**3b**

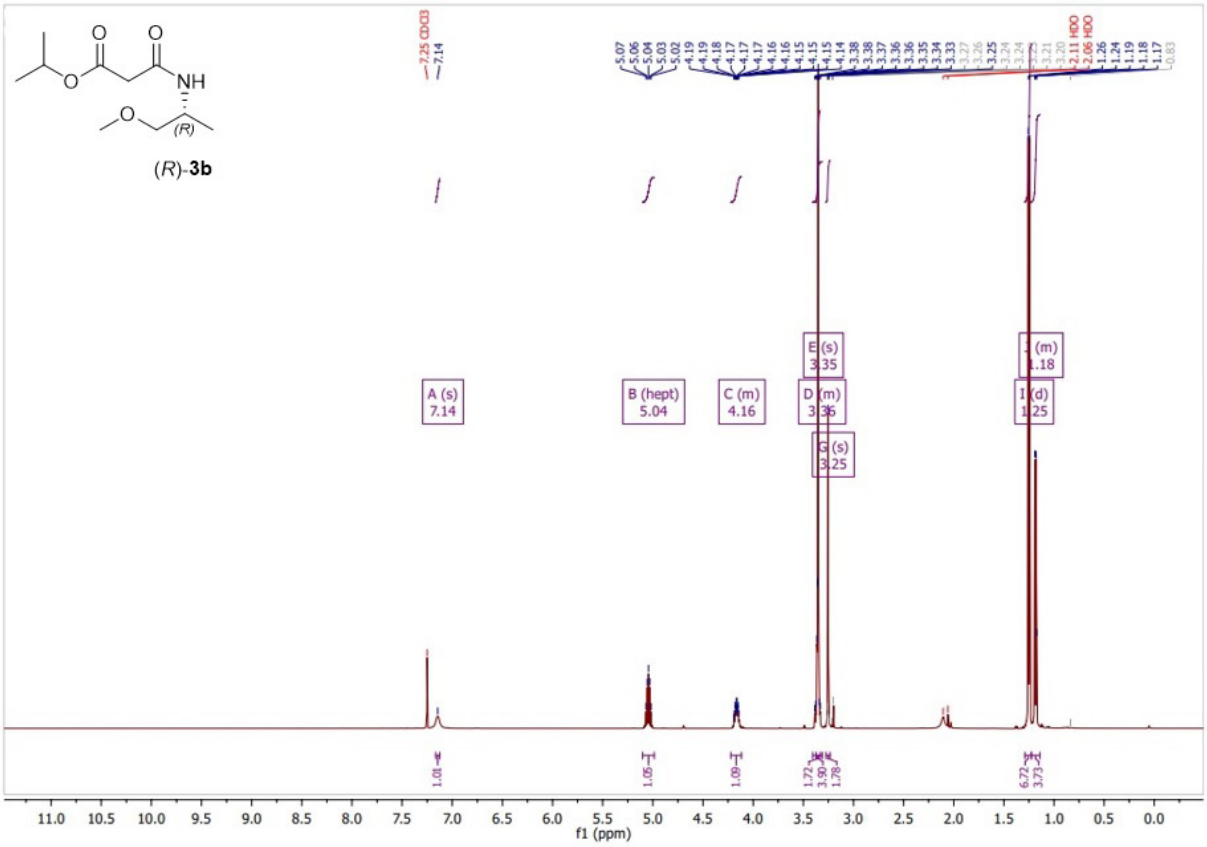

Fig. S20 ^{1}H-NMR spectrum of isopropyl (*R*)-3-[(1-methoxypropan-2-yl)amino]-3-oxopropanoate (*R*)-**3b**

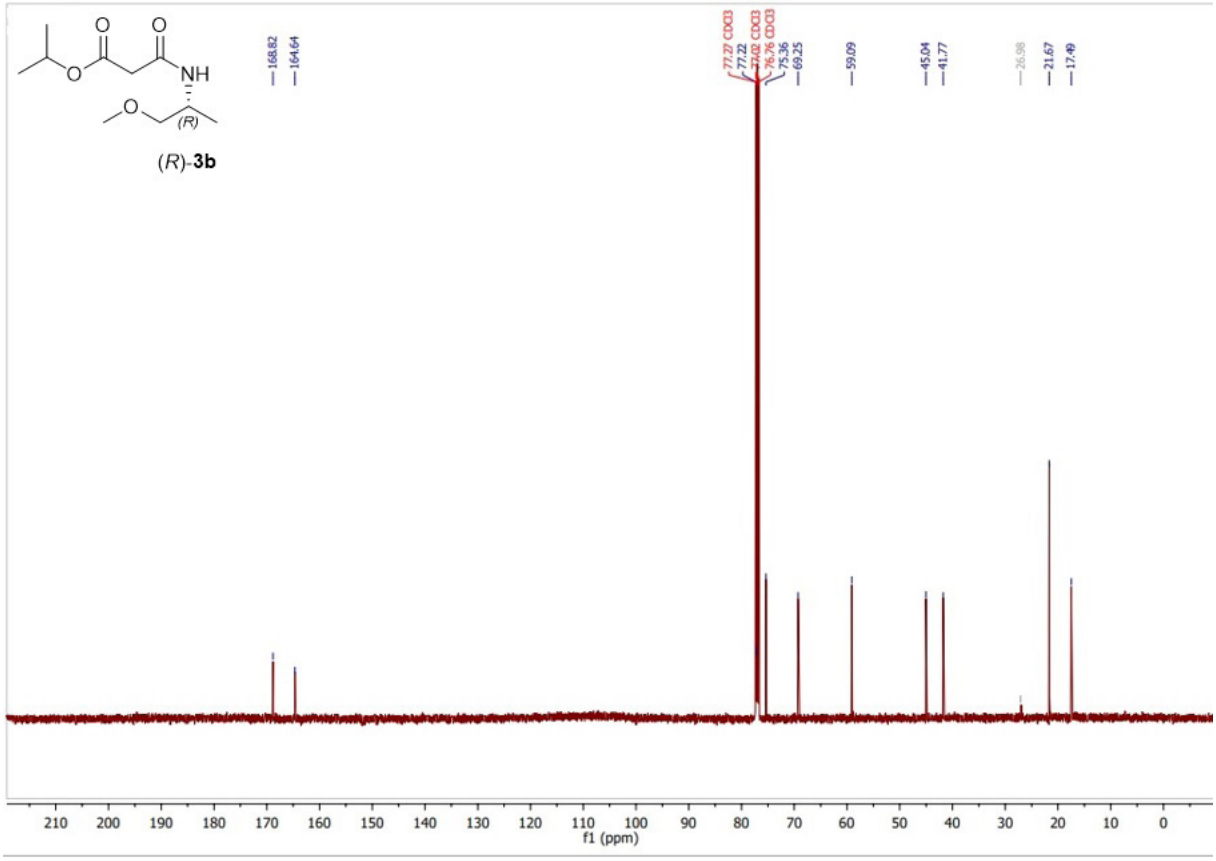

Fig. S21 ^{13}C-NMR spectrum of isopropyl (*R*)-3-[(1-methoxypropan-2-yl)amino]-3-oxopropanoate (*R*)-**3b**

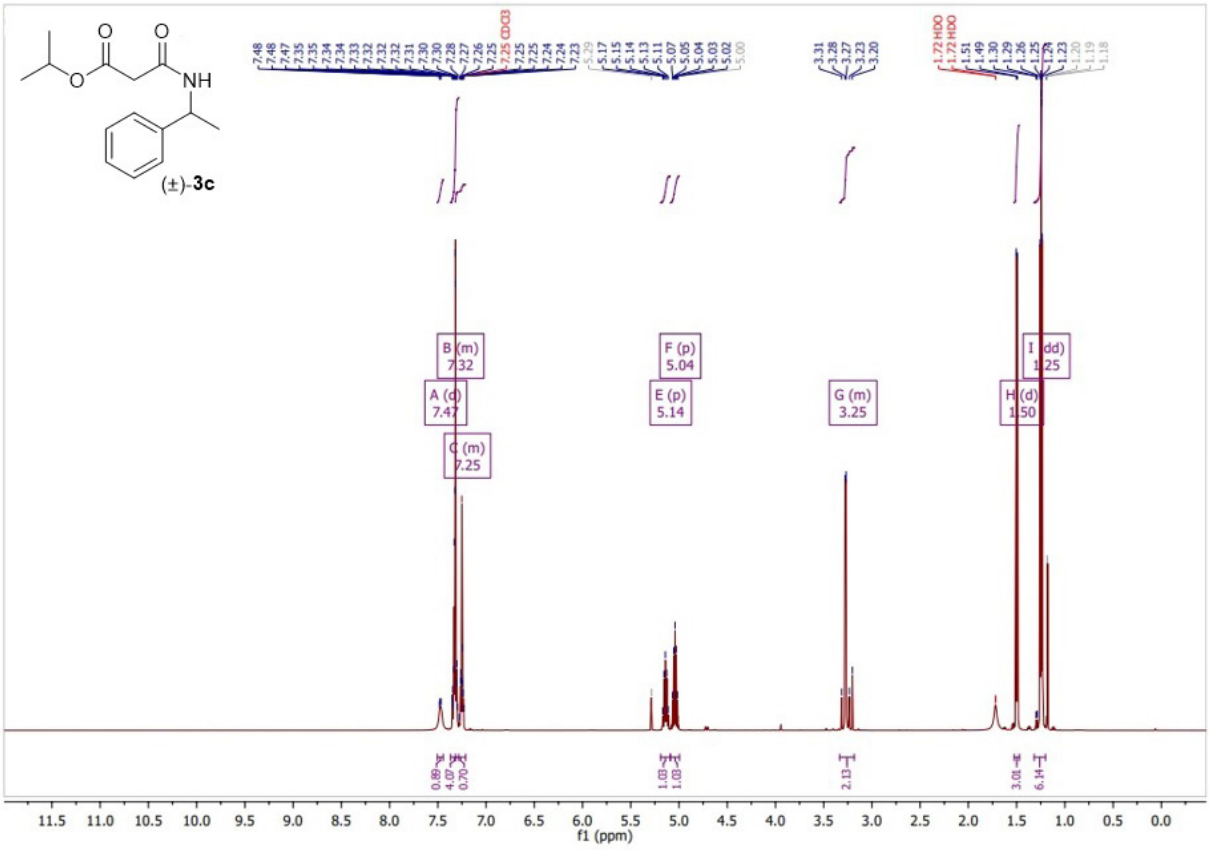

Fig. S22 [1]H-NMR spectrum of racemic isopropyl 3-oxo-3-[(1-phenylethyl)amino]propanoate (±)-**3c**

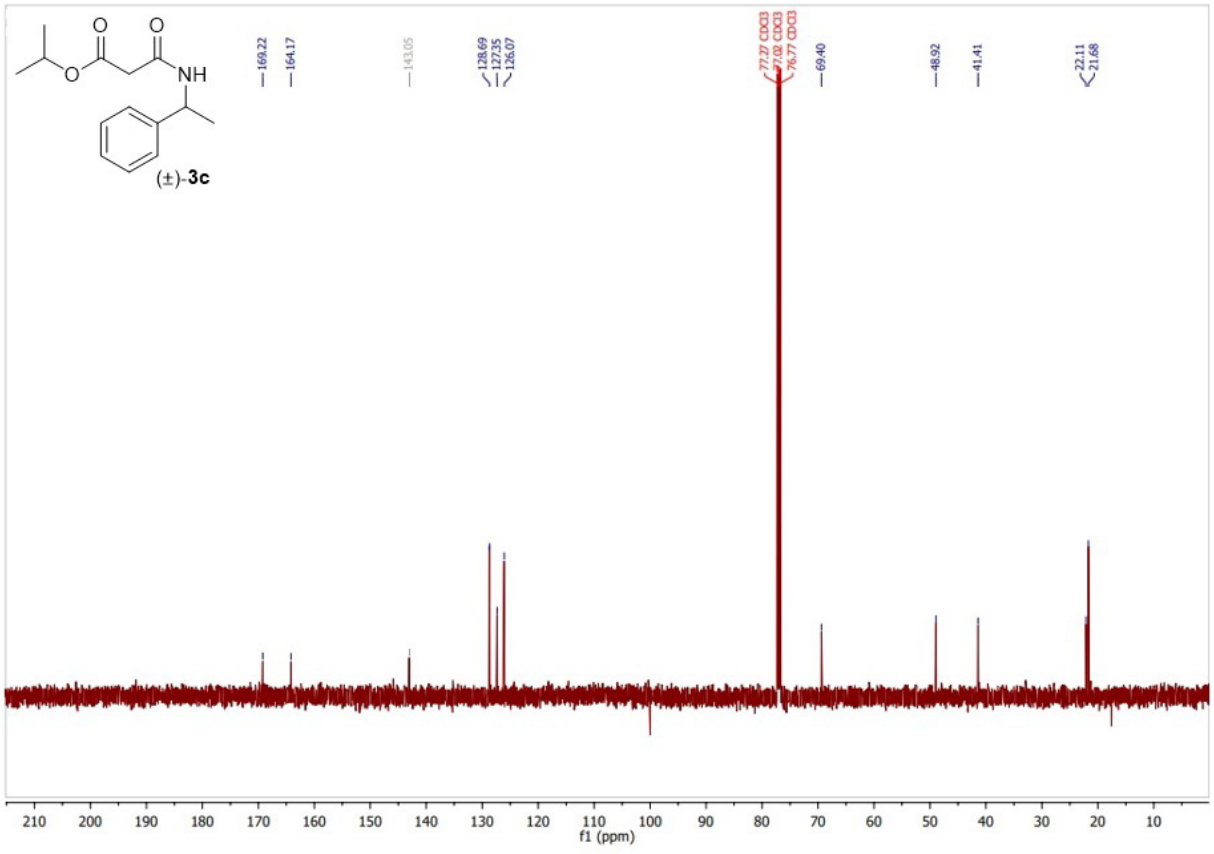

Fig. S23 [13]C-NMR spectrum of racemic isopropyl 3-oxo-3-[(1-phenylethyl)amino]propanoate (±)-**3c**

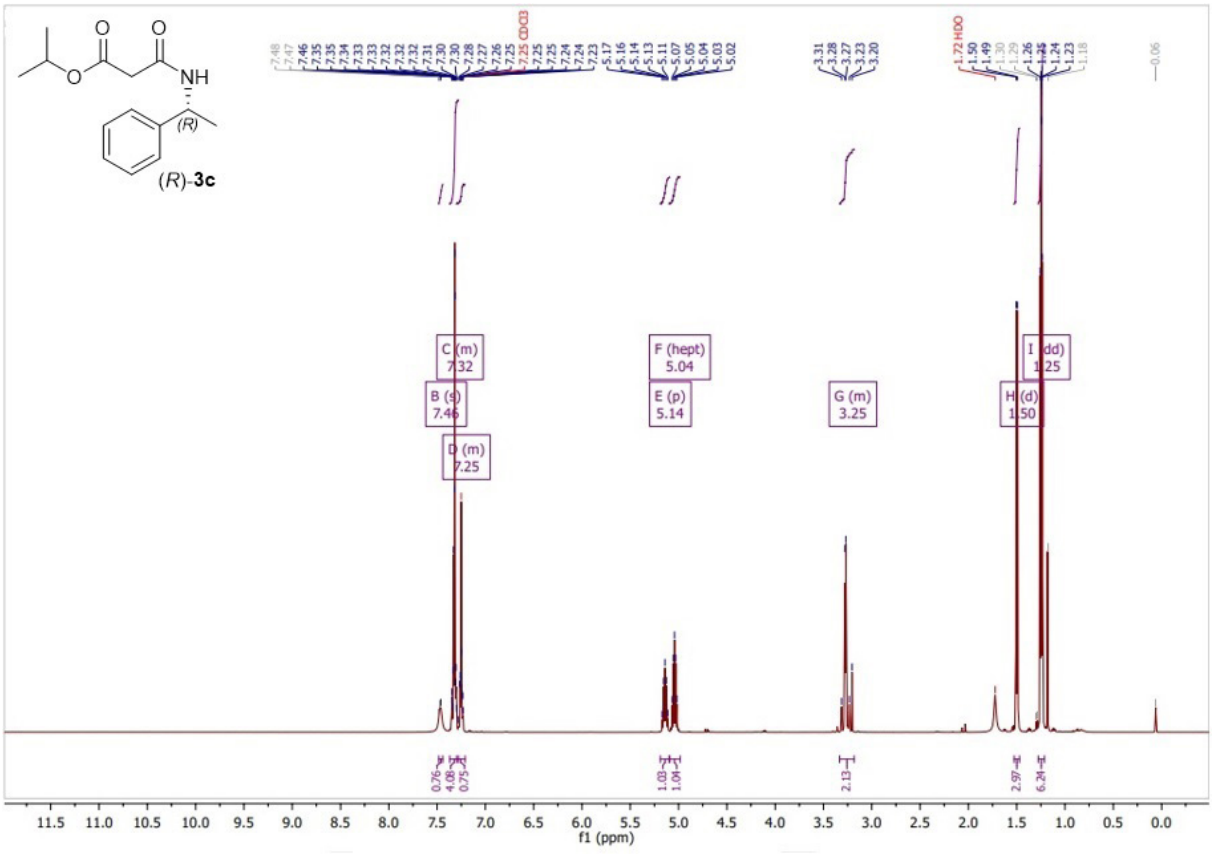

Fig. S24 ^{1}H-NMR spectrum of isopropyl (*R*)-3-oxo-3-[(1-phenylethyl)amino]propanoate (*R*)-**3c**

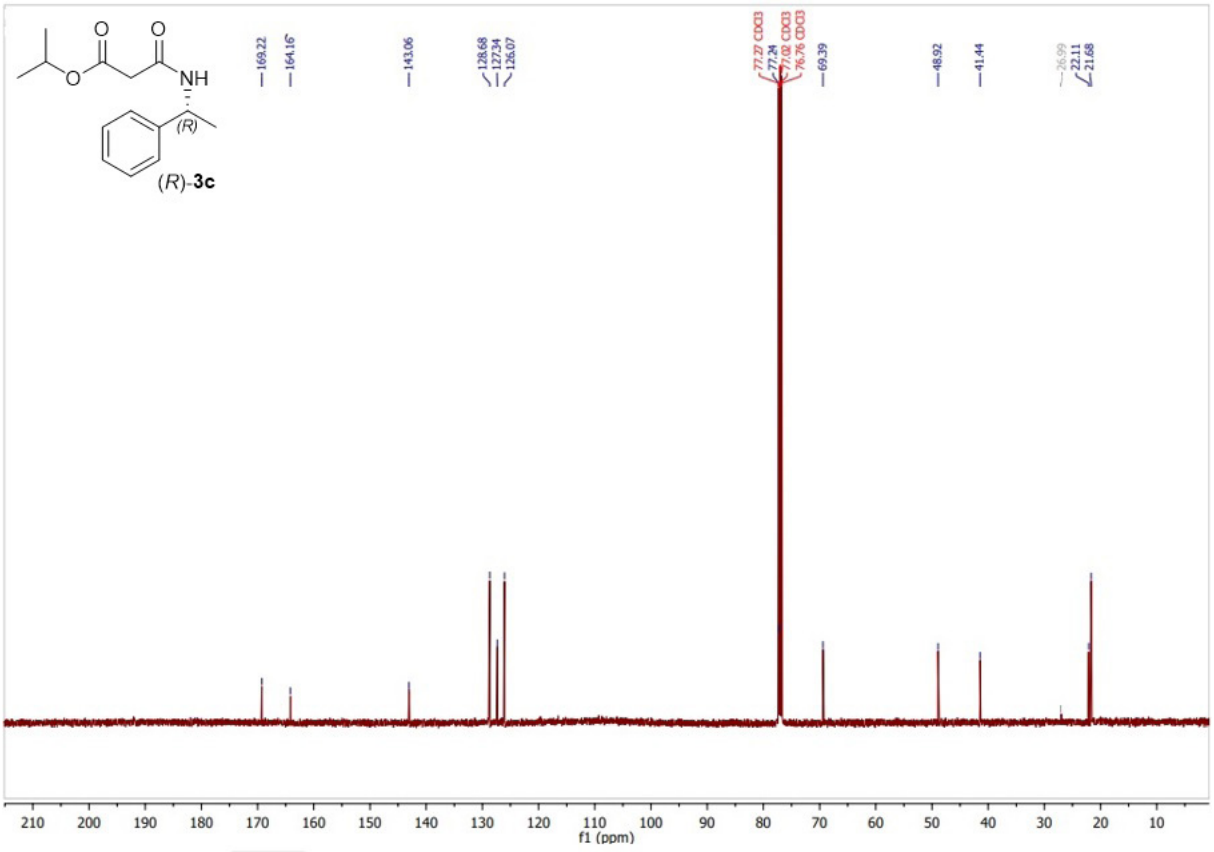

Fig. S25 ^{13}C-NMR spectrum of isopropyl (*R*)-3-oxo-3-[(1-phenylethyl)amino]propanoate (*R*)-**3c**

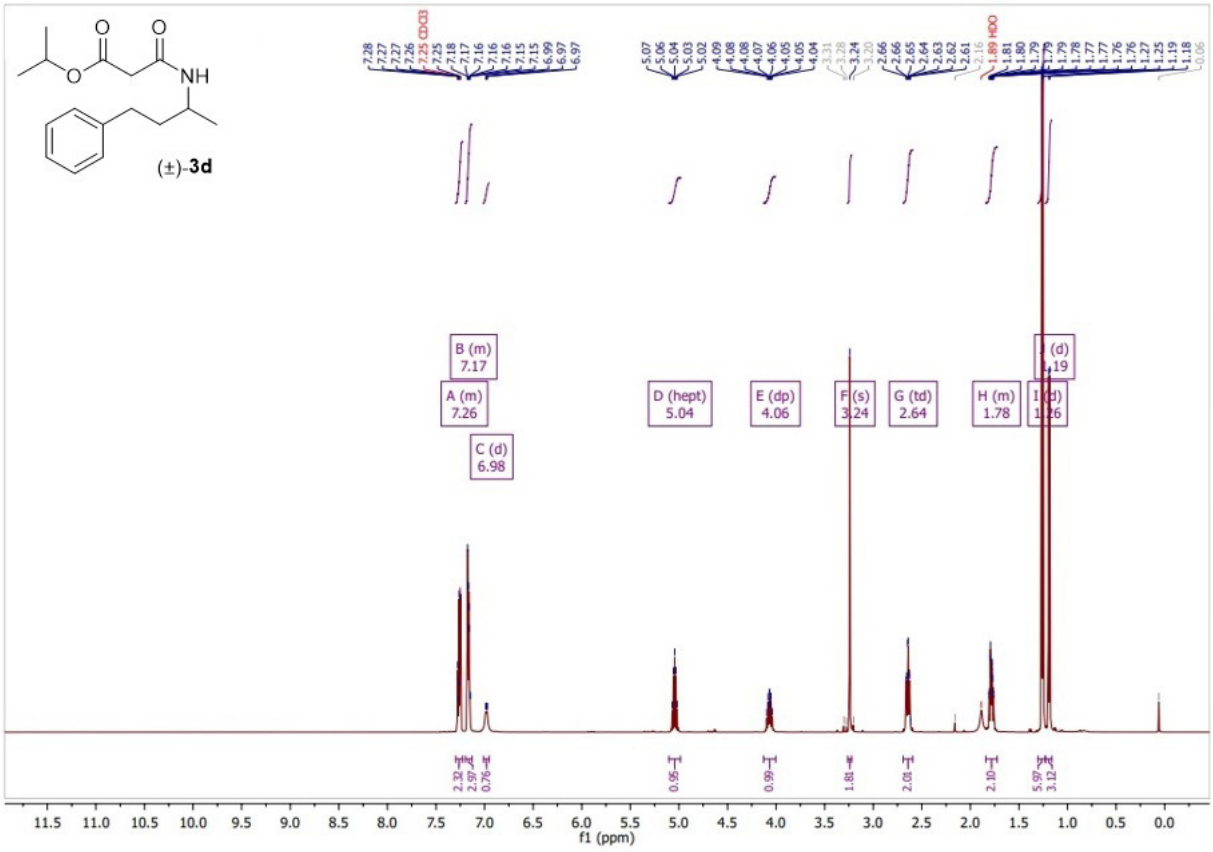

Fig. S26 [1]H-NMR spectrum of racemic isopropyl 3-oxo-3-[(4-phenylbutan-2-yl)amino]propanoate (±)-**3d**

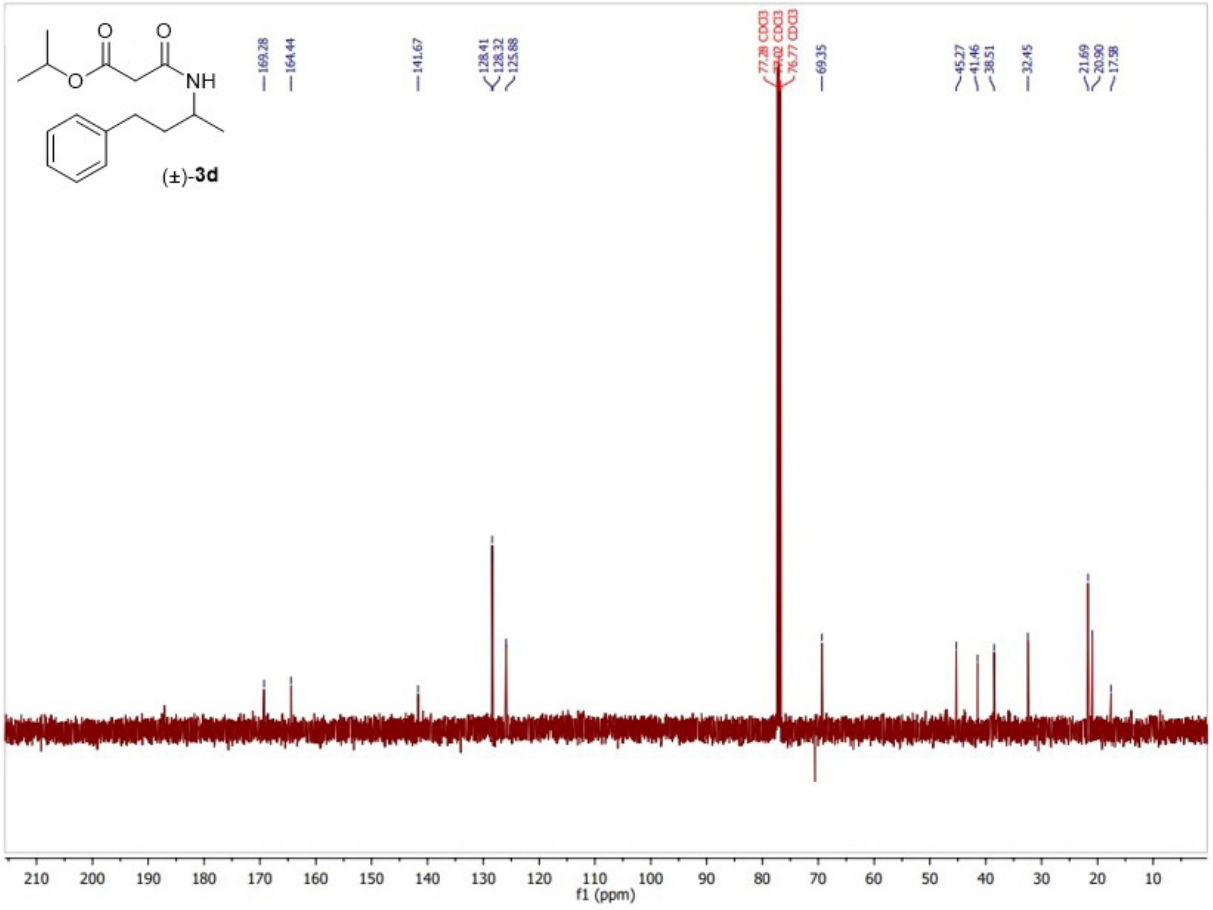

Fig. S27 [13]C-NMR spectrum of racemic isopropyl 3-oxo-3-[(4-phenylbutan-2-yl)amino]propanoate (±)-**3d**

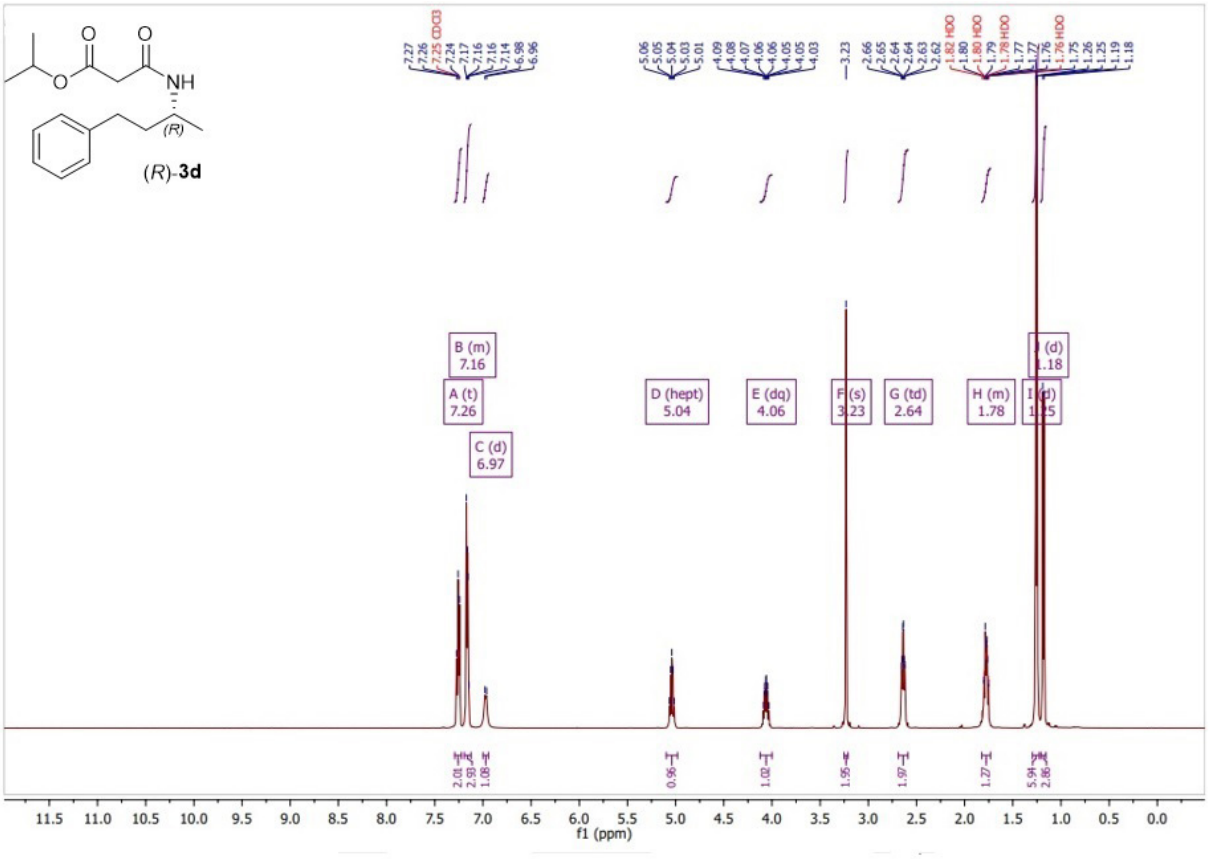

Fig. S28 [1]H-NMR spectrum of isopropyl (*R*)-3-oxo-3-[(4-phenylbutan-2-yl)amino]propanoate (*R*)-**3d**

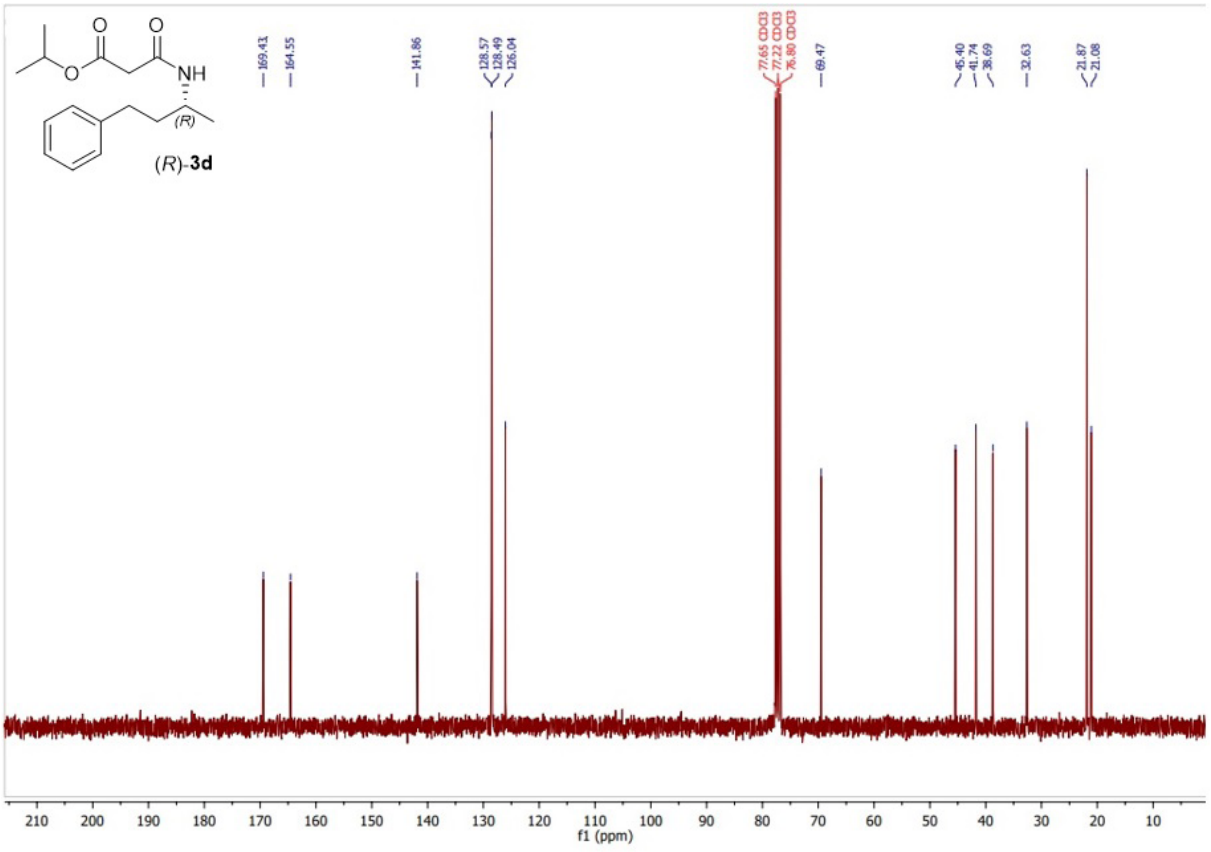

Fig. S29 [13]C-NMR spectrum of isopropyl (*R*)-3-oxo-3-[(4-phenylbutan-2-yl)amino]propanoate (*R*)-**3d**

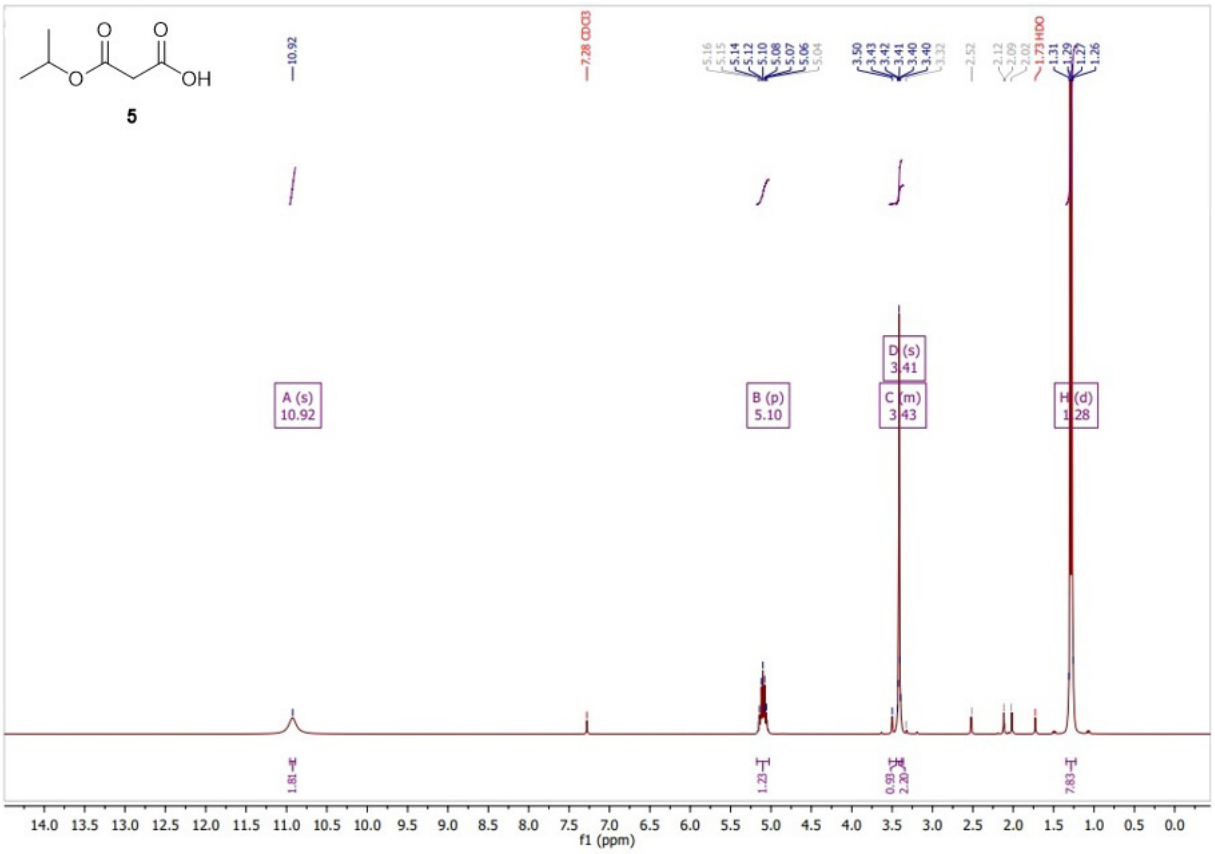

Fig. S30 ^{1}H-NMR spectrum of 3-isopropoxy-3-oxopropanoic acid (**5**)

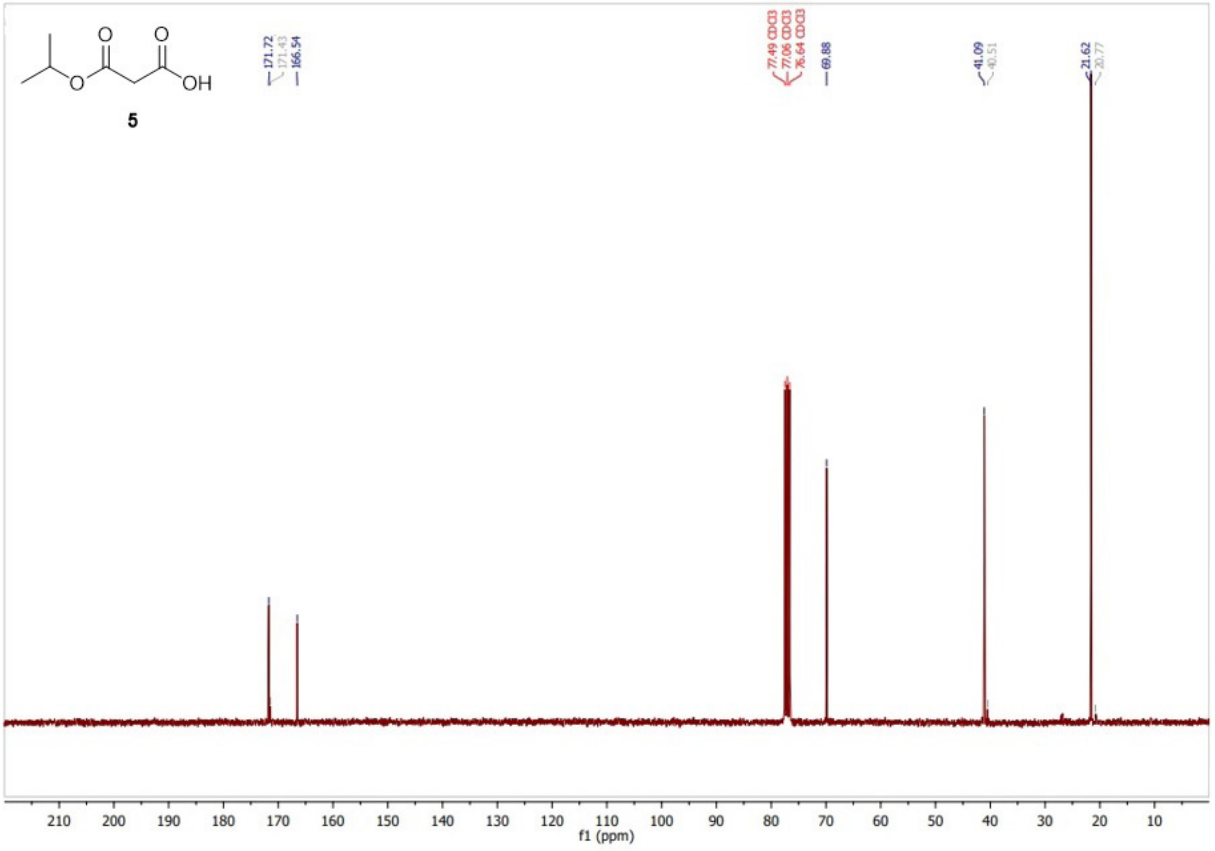

Fig. S31 ^{13}C-NMR spectrum of 3-isopropoxy-3-oxopropanoic acid (**5**)