CLAIMS

1. A composition for use in the treatment of Alzheimer's disease (AD) or a related disorder, comprising at least levosimendan, or salt(s) or prodrug(s) or derivative(s) or sustained release formulation(s) thereof.

2. The composition of claim 1, further comprising at least one additional compound selected from aminocaproic acid, acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil,

terbinafine, cinnarizine, eplerenone, carbenoxolone, sulodexide, carbamazine, ciclopirox, amobarbital, cefotetan, erythrityl tetranitrate, methyclothiazide, risedronate, enprofylline, oxtriphylline, paramethadione, cefmenoxime, aprindine, etomidate, mitiglinide, benidipine, and zonisamide, or salts or prodrugs or derivatives or sustained release formulations thereof, for combined, separate or sequential administration.

3. The composition of claim 2, wherein said one additional compound is selected from aminocaproic acid, baclofen, sulfisoxazole, terbinafine, and, or salts or prodrugs or derivatives or sustained release formulations thereof, for combined, separate or sequential administration.

4. The composition of claim 1,

in combination with at least one compound chosen from the group consisting of acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil, terbinafine and zonisamide, or salt(s) or prodrug(s) or derivative(s) or sustained release formulation(s) thereof.

5. A composition comprising levosimendan, or salt(s) or prodrug(s) or derivative(s) or sustained release formulation(s) thereof, in combination with at least one compound chosen from the group consisting of acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil, terbinafine and zonisamide, or salt(s) or

prodrug(s) or derivative(s) or sustained release formulation(s) thereof, for simultaneous, separate or sequential administration.

6. The composition of any one of the preceding claims, wherein said composition comprises at least one of the following drug combinations, the drugs in each combination being for combined, separate or sequential administration:

- baclofen and levosimendan,
- aminocaproic acid and levosimendan,
- levosimendan and sulfisoxazole,
- levosimendan and terbinafine,

- levosimendan and erythrityl tetranitrate, or
- levosimendan and zonisamide.

7. The composition of claim 6, comprising at least one of the following drug combinations, the drugs in each combination being for combined, separate or sequential administration:

- baclofen and levosimendan,
- aminocaproic acid and levosimendan,
- levosimendan and sulfisoxazole, or
- levosimendan and terbinafine.

8. The composition of anyone of the preceding claims further comprising at least one drug selected from an inhibitor ABAT, (preferably, vigabatrin), and/or an inhibitor ABL1 (preferably imatinib), and/or an inhibitor of ACAT (preferably, hesperetin), and/or a modulator of ADCY2 (preferably, vidarabine), and/or a modulator of adenosine ADORA1/2A/3 receptors (preferably selected from clofarabine and

defibrotide), and/or a modulator of adrenergic ADRA receptors (preferably selected from propericiazine, methotrimeprazine, mephentermine and dipivefrin), and/or a modulator of adrenergic ADRB receptors (preferably selected from guanethidine, bethanidine, bitolterol and procaterol), and/or an inhibitor of ALOX5/12 (preferably selected from diethylcarbamazine and masoprocol), and/or an inhibitor of ATP1A1 (preferably, deslanoside and omeprazole), and/or an activator of autophagy (preferably, trehalose), and/or an inhibitor of CA10 (preferably, methazolamide), and/or a modulator of calcification (preferably selected from foscarnet, gallium nitrate, calcifediol, calcitonin, calcitriol, clodronic acid, dihydrotachysterol, elcatonin, etidronic acid, ipriflavone and teriparatide acetate), and/or a modulator of CALM1 (calmodulin) (preferably, aprindine), and/or a modulator of CD44 (preferably selected from eflornithine and benzbromarone), and/or a chemical chaperon (preferably selected from arabitol and mannitol), and/or a modulator of muscarinic CHRM receptors (preferably selected from cyclopentolate, oxyphencyclimine, trospium and isoflurophate), and/or an antagonist of nicotinic acetylcholine CHRNA receptors, which is not able to cross blood-brain-barrier (preferably selected from pancuronium, pipecuronium, rapacuronium, rocuronium, succinylcholine, vecuronium, atracurium, cisatracurium, doxacurium, mecamylamine, metocurine, mivacurium and neomycin), and/or an inhibitor of CNGB3 (preferably, amiloride), and/or a modulator of CYSLTR1/2, PTGER1, PTGFR and TBXA2R eicosanoid receptors (preferably selected from travoprost, montelukast, cinalukast, amlexanox, carboprost tromethamine, bimatoprost and ridogrel), and/or an inhibitor of DHFR (preferably, pyrimethamine and triamterene), and/or a modulator of dopamine DRD2 receptor (preferably selected from dihydroergotamine and cabergoline), and/or an agonist of dopamine receptor DRD5 (preferably, fenoldopam), and/or an inhibitor of EDNRA (preferably selected from sulfamethoxazole and gentamicin), and/or a modulator of ENPP2 (autotaxin) (preferably, L-histidine), and/or an inhibitor of ERBB2 (preferably, lapatinib), and/or a modulator of F2 thrombin (preferably selected from sulodexide, ximelagatran, warfarin, phenprocoumon, enoxaparin, ardeparin, fondaparinux, latamoxef, bacitracin, ticlopidine and erdosteine), and/or an inhibitor of FDPS (preferably, alendronate), and/or a modulator of GABRA2 (preferably selected from phenobarbital, methohexital, cefotiam, clomethiazole, thiopental, lubiprostone and aztreonam), and/or an antagonist of GRIK1 (preferably, topiramate), and/or a modulator of GSK3B activity (preferably selected from albuterol and metaraminol), and/or a modulator of HIF1A signalling

(preferably selected from meloxicam, topotecan, deferoxamine, usnic acid, hydralazine, deferiprone, dibenzoylmethane, avobenzone, dinoprostone, epoprostenol, 2-oxoglutarate and mimosine), and/or an inhibitor of HK2 (hexokinase II) (preferably selected from quinine, gabexate, bifonazole and clotrimazole), and/or a modulator of HMOX1 (preferably selected from auranofin, hematin/hemin and heme arginate), and/or a modulator of HTR1B/1D receptors (preferably selected from ergotamine and eletriptan), and/or an inhibitor of IMPDH1 and IMPDH2 (preferably, thioguanine), and/or a modulator of integrins ITGA/B (preferably, rabeprazole), and/or an inhibitor of KCND2 potassium channel (preferably, lidocaine), and/or an inhibitor of KCNH2 potassium channel (preferably, ibutilide), and/or a modulator of KCNMA1 (preferably selected from cromoglicate, ethinamate, ketoconazole, chlorzoxazone, unoprostone, hesperitin, bendroflumethiazide, benzthiazide, chlorothiazide, cyclothiazide, diazoxide, hydroflumethiazide, quinethazone and trichlormethiazide), and/or a modulator of MGST2 (preferably, balsalazide), and/or a modulator of MMP2 and MMP9 (preferably, candoxatril), and/or a modulator of mitochondrial permeability transition pore formation (preferably selected from carbenoxolone and ciprofloxacin), and/or an inhibitor of MTOR (preferably, rapamycin), and/or a modulator of NOS1/2A/3 (preferably selected from propylthiouracil, thiethylperazine and ketotifen), and/or a modulator of NR3C1 receptor signalling (preferably selected from metyrapone and mometasone), and/or a modulator of NR3C2 receptor (preferably selected from eplerenone and fludrocortisone), and/or an inhibitor of NRP2 (preferably, pegaptanib), and/or a modulator of OPCML (preferably, alfentanil), and/or a modulator of OPRK1 and OPRS1 (preferably selected from buprenorphine and pentazocine), and/or OPRM (preferably, levallorphan), and/or a modulator of oxidative phosphorylation (preferably selected from almitrine, erythromycin, kanamycin and cerulenin), and/or an inhibitor of P2RY1 and/or P2RY12 receptors (preferably, tirofiban), and/or an inhibitor of PDE11A, PDE4A and PDE5A phosphodiesterases (preferably selected from mesembrine, milrinone and anagrelide), and/or an inhibitor of PDE3A/3B and PDE4A/4B phosphodiesterases and an activator of BK channels (preferably, cilostazol), and/or a modulator of PDGFRA/B receptors (preferably selected from becaplermin, streptomycin, delphinidin, cyanidin and fumagillin), and/or a modulator of PLA2 (preferably selected from niflumic acid, hydrocortamate and netilmicin), and/or a modulator of PLAT (preferably, sodium phenylbutyrate), and/or a modulator of PLD2 (preferably, ambrisentan), and/or an inhibitor of PLG (preferably, aminocaproic acid),

and/or a modulator of PPARD (preferably, icosapent), and/or a modulator of PPARG (preferably, phenylbutyrate), and/or a modulator of PRKG1 (preferably selected from nitroprusside, nitroglycerin and paricalcitol), and/or an inhibitor of PTP1B (preferably, tiludronate), and/or a modulator of RHOA/RAC (preferably selected from chlorthalidone, hydrochlorothiazide, clomocycline, lymecycline, natamycin, amphotericin B, cefalexin, cephaloridine, cefuroxime, dicloxacillin), and/or a modulator of RXR/RAR (preferably, tazarotene), and/or an antagonist of SCN1A/B sodium channels (preferably, fosphenytoin), and/or an inhibitor of SLC12A1 (preferably, bumetanide), and/or an inhibitor of SLC6A1 (preferably, tiagabine), and/or a modulator of SLC9A1 (preferably, buclizine), and/or an inhibitor of SRD5A1 (preferably, dutasteride), and/or an antagonist of TACR1 (preferably selected from aprepitant and vapreotide), and/or a modulator of TGFB signalling (preferably, aliskiren), and/or a modulator of THRA/B (preferably selected from liothyronine), and/or an inhibitor of TOP2A (preferably, lucanthone), and/or a modulator of TSPO (preferably selected from flunitrazepam and temazepam), and/or a modulator of VDAC1 (preferably, dihydroxyaluminium), and/or an inhibitor of VEGFR1 (preferably, sunitinib), and/or a modulator of vitamin K metabolism (preferably selected cefmetazole, cefamandole and cefoperazone), and/or an inhibitor of VMAT (preferably selected from tetrabenazine, deserpidine and nitisinone), and/or an inhibitor of voltage gated calcium channels (CACNA) (preferably selected from lercanidipine, pregabalin, mibefradil, aranidipine, bamidipine, bencyclane, bepridil, clentiazem, efonidipine, elgodipine, etafenone, fendiline, flunarizine, gallopamil, isradipine, lacidipine, lidoflazine, lomerizine, manidipine, nicardipine, nilvadipine, nimodipine, nisoldipine, nitrendipine, perhexiline, prenylamine, semotiadil and terodiline), and/or an inhibitor of YES1, SRC and EPHA3 (preferably, dasatinib).

9. The composition of any one of the preceding claims, which comprises a pharmaceutically acceptable carrier or excipient.

10. The composition of any one of the preceding claims, wherein said composition is to be administered repeatedly to a subject.

11. Use of a composition comprising at least levosimendan, or salt(s) or prodrug(s) or derivative(s) or sustained release formulation(s) thereof in the manufacture of a medicament for treating Alzheimer's disease (AD) or a related disorder.

12. The use of claim 11, wherein said composition comprises at least one additional compound selected from aminocaproic acid, acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil, terbinafine, cinnarizine, eplerenone, carbenoxolone, sulodexide, carbamazine, ciclopirox, amobarbital, cefotetan, erythrityl tetranitrate, methyclothiazide, risedronate, enprofylline, oxtriphylline, paramethadione, cefmenoxime, aprindine, etomidate, mitiglinide, benidipine, and zonisamide, or salts or prodrugs or derivatives or sustained release formulations thereof, for combined, separate or sequential administration.

13. The use of claim 12, wherein said additional compound is selected from aminocaproic acid, baclofen, sulfisoxazole, terbinafine, and, or salts or prodrugs or derivatives or sustained release formulations thereof.

14. The use of claim 11, wherein said medicament further comprises, in combination, at least one compound chosen from the group consisting of acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil, terbinafine and zonisamide, or salt(s) or prodrug(s) or derivative(s) or sustained release formulation(s) thereof.

15. Use of the composition as claimed in any one of claims 5 to 10, in the manufacture of a medicament for treating Alzheimer's disease (AD) or a related disorder.

CLAIMS

1. Use of a composition comprising levosimendan, or pharmaceutically acceptable salt(s) or prodrug(s) or sustained release formulation(s) thereof in the manufacture of a medicament for treating Alzheimer's disease or a related disorder selected from senile dementia of AD type, Parkinson's disease, Lewy body dementia, vascular dementia, mild cognitive impairment, age-associated memory impairment and problem associated with ageing, post-encephalitic parkinsonism, amyotrophic lateral sclerosis, multiple sclerosis or Down syndrome.

2. The use of claim 1, wherein said medicament comprises at least one additional compound selected from aminocaproic acid, acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil, terbinafine, cinnarizine, eplerenone, carbenoxolone, sulodexide, carbamazine, ciclopirox, amobarbital, cefotetan, erythrityl tetranitrate, methyclothiazide, risedronate, enprofylline, oxtriphylline, paramethadione, cefmenoxime, aprindine, etomidate, mitiglinide, benidipine, and zonisamide, or pharmaceutically acceptable salt(s) or prodrug(s) or sustained release formulation(s) thereof, for combined, separate or sequential administration.

3. The use of claim 2, wherein said additional compound is selected from aminocaproic acid, baclofen, sulfisoxazole and terbinafine, or pharmaceutically acceptable salt(s) or prodrug(s) or sustained release formulation(s) thereof.

4. The use of claim 2, wherein said additional compound is selected from acamprosate, amlodipine, argatroban, baclofen, cilostazol, cinacalcet, clopidogrel, dyphylline, fenoldopam, leflunomide, mepacrine, methimazole, phenformin, prilocaine, rifabutin, sulfisoxazole, tadalafil, terbinafine and zonisamide, or pharmaceutically acceptable salt(s) or prodrug(s) or sustained release formulation(s) thereof.

5. The use of anyone of the preceding claims, wherein said medicament further comprises at least one compound selected from an inhibitor ABAT, (preferably, vigabatrin), and/or an inhibitor ABL1 (preferably imatinib), and/or an inhibitor of ACAT (preferably, hesperetin), and/or a modulator of ADCY2 (preferably, vidarabine), and/or a modulator of adenosine ADORA1/2A/3 receptors (preferably selected from clofarabine and defibrotide), and/or a

modulator of adrenergic ADRA receptors (preferably selected from propericiazine, methotrimeprazine, mephentermine and dipivefrin), and/or a modulator of adrenergic ADRB receptors (preferably selected from guanethidine, bethanidine, bitolterol and procaterol), and/or an inhibitor of ALOX5/12 (preferably selected from diethylcarbamazine and masoprocol), and/or an inhibitor of ATP1A1 (preferably, deslanoside and omeprazole), and/or an activator of autophagy (preferably, trehalose), and/or an inhibitor of CA10 (preferably, methazolamide), and/or a modulator of calcification (preferably selected from foscarnet, gallium nitrate, calcifediol, calcitonin, calcitriol, clodronic acid, dihydrotachysterol, elcatonin, etidronic acid, ipriflavone and teriparatide acetate), and/or a modulator of CALM1 (calmodulin) (preferably, aprindine), and/or a modulator of CD44 (preferably selected from eflornithine and benzbromarone), and/or a chemical chaperon (preferably selected from arabitol and mannitol), and/or a modulator of muscarinic CHRM receptors (preferably selected from cyclopentolate, oxyphencyclimine, trospium and isoflurophate), and/or an antagonist of nicotinic acetylcholine CHRNA receptors, which is not able to cross blood-brain-barrier (preferably selected from pancuronium, pipecuronium, rapacuronium, rocuronium, succinylcholine, vecuronium, atracurium, cisatracurium, doxacurium, mecamylamine, metocurine, mivacurium and neomycin), and/or an inhibitor of CNGB3 (preferably, amiloride), and/or a modulator of CYSLTR1/2, PTGER1, PTGFR and TBXA2R eicosanoid receptors (preferably selected from travoprost, montelukast, cinalukast, amlexanox, carboprost tromethamine, bimatoprost and ridogrel), and/or an inhibitor of DHFR (preferably, pyrimethamine and triamterene), and/or a modulator of dopamine DRD2 receptor (preferably selected from dihydroergotamine and cabergoline), and/or an agonist of dopamine receptor DRD5 (preferably, fenoldopam), and/or an inhibitor of EDNRA (preferably selected from sulfamethoxazole and gentamicin), and/or a modulator of ENPP2 (autotaxin) (preferably, L-histidine), and/or an inhibitor of ERBB2 (preferably, lapatinib), and/or a modulator of F2 thrombin (preferably selected from sulodexide, ximelagatran, warfarin, phenprocoumon, enoxaparin, ardeparin, fondaparinux, latamoxef, bacitracin, ticlopidine and erdosteine), and/or an inhibitor of FDPS (preferably, alendronate), and/or a modulator of GABRA2 (preferably selected from phenobarbital, methohexital, cefotiam, clomethiazole, thiopental, lubiprostone and aztreonam), and/or an antagonist of GRIK1 (preferably, topiramate), and/or a modulator of GSK3B activity (preferably selected from albuterol and metaraminol), and/or a modulator of HIF1A signalling (preferably selected from meloxicam, topotecan, deferoxamine, usnic acid, hydralazine, deferiprone, dibenzoylmethane, avobenzone, dinoprostone, epoprostenol, 2-oxoglutarate and mimosine), and/or an inhibitor of

HK2 (hexokinase II) (preferably selected from quinine, gabexate, bifonazole and clotrimazole), and/or a modulator of HMOX1 (preferably selected from auranofin, hematin/hemin and heme arginate), and/or a modulator of HTR1B/1D receptors (preferably selected from ergotamine and eletriptan), and/or an inhibitor of IMPDH1 and IMPDH2 (preferably, thioguanine), and/or a modulator of integrins ITGA/B (preferably, rabeprazole), and/or an inhibitor of KCND2 potassium channel (preferably, lidocaine), and/or an inhibitor of KCNH2 potassium channel (preferably, ibutilide), and/or a modulator of KCNMA1 (preferably selected from cromoglicate, ethinamate, ketoconazole, chlorzoxazone, unoprostone, hesperitin, bendroflumethiazide, benzthiazide, chlorothiazide, cyclothiazide, diazoxide, hydroflumethiazide, quinethazone and trichlormethiazide), and/or a modulator of MGST2 (preferably, balsalazide), and/or a modulator of MMP2 and MMP9 (preferably, candoxatril), and/or a modulator of mitochondrial permeability transition pore formation (preferably selected from carbenoxolone and ciprofloxacin), and/or an inhibitor of MTOR (preferably, rapamycin), and/or a modulator of NOS1/2A/3 (preferably selected from propylthiouracil, thiethylperazine and ketotifen), and/or a modulator of NR3C1 receptor signalling (preferably selected from metyrapone and mometasone), and/or a modulator of NR3C2 receptor (preferably selected from eplerenone and fludrocortisone), and/or an inhibitor of NRP2 (preferably, pegaptanib), and/or a modulator of OPCML (preferably, alfentanil), and/or a modulator of OPRK1 and OPRS1 (preferably selected from buprenorphine and pentazocine), and/or OPRM (preferably, levallorphan), and/or a modulator of oxidative phosphorylation (preferably selected from almitrine, erythromycin, kanamycin and cerulenin), and/or an inhibitor of P2RY1 and/or P2RY12 receptors (preferably, tirofiban), and/or an inhibitor of PDE11A, PDE4A and PDE5A phosphodiesterases (preferably selected from mesembrine, milrinone and anagrelide), and/or an inhibitor of PDE3A/3B and PDE4A/4B phosphodiesterases and an activator of BK channels (preferably, cilostazol), and/or a modulator of PDGFRA/B receptors (preferably selected from becaplermin, streptomycin, delphinidin, cyanidin and fumagillin), and/or a modulator of PLA2 (preferably selected from niflumic acid, hydrocortamate and netilmicin), and/or a modulator of PLAT (preferably, sodium phenylbutyrate), and/or a modulator of PLD2 (preferably, ambrisentan), and/or an inhibitor of PLG (preferably, aminocaproic acid), and/or a modulator of PPARD (preferably, icosapent), and/or a modulator of PPARG (preferably, phenylbutyrate), and/or a modulator of PRKG1 (preferably selected from nitroprusside, nitroglycerin and paricalcitol), and/or an inhibitor of PTP1B (preferably, tiludronate), and/or a modulator of RHOA/RAC (preferably selected from chlorthalidone, hydrochlorothiazide, clomocycline, lymecycline,

natamycin, amphotericin B, cefalexin, cephaloridine, cefuroxime, dicloxacillin), and/or a modulator of RXR/RAR (preferably, tazarotene), and/or an antagonist of SCN1A/B sodium channels (preferably, fosphenytoin), and/or an inhibitor of SLC12A1 (preferably, bumetanide), and/or an inhibitor of SLC6A1 (preferably, tiagabine), and/or a modulator of SLC9A1 (preferably, buclizine), and/or an inhibitor of SRD5A1 (preferably, dutasteride), and/or an antagonist of TACR1 (preferably selected from aprepitant and vapreotide), and/or a modulator of TGFB signalling (preferably, aliskiren), and/or a modulator of THRA/B (preferably selected from liothyronine), and/or an inhibitor of TOP2A (preferably, lucanthone), and/or a modulator of TSPO (preferably selected from flunitrazepam and temazepam), and/or a modulator of VDAC1 (preferably, dihydroxyaluminium), and/or an inhibitor of VEGFR1 (preferably, sunitinib), and/or a modulator of vitamin K metabolism (preferably selected cefmetazole, cefamandole and cefoperazone), and/or an inhibitor of VMAT (preferably selected from tetrabenazine, deserpidine and nitisinone), and/or an inhibitor of voltage gated calcium channels (CACNA) (preferably selected from lercanidipine, pregabalin, mibefradil, aranidipine, bamidipine, bencyclane, bepridil, clentiazem, efonidipine, elgodipine, etafenone, fendiline, flunarizine, gallopamil, isradipine, lacidipine, lidoflazine, lomerizine, manidipine, nicardipine, nilvadipine, nimodipine, nisoldipine, nitrendipine, perhexiline, prenylamine, semotiadil and terodiline), and/or an inhibitor of YES1, SRC and EPHA3 (preferably, dasatinib).