Supplementary Fig 1. Geographic distribution of clinical trials



Supplementary Fig 2. Overall ROB by year and by study phase



**Supplementary Appendix 1: Search strategy**

**Pubmed:**

("Amyotrophic Lateral Sclerosis"[Mesh] OR ("Amyotrophic Lateral Sclerosis"[Title/Abstract] OR "Lou Gehrig\*"[Title/Abstract] OR "ALS - Amyotrophic Lateral Sclerosis"[Title/Abstract] OR "ALS Amyotrophic Lateral Sclerosis"[Title/Abstract] OR "Motor Neuron Disease"[Title/Abstract]) AND (((humans[Filter]) AND (english[Filter]))) AND ("Clinical Trials as Topic"[Mesh] OR "clinical trial"[Title/Abstract] OR "RCT"[Title/Abstract] OR "open label"[Title/Abstract] OR "randomi\*"[Title/Abstract] AND ((humans[Filter]) AND (english[Filter])))) Filters: English, Humans

**Embase:**

#1: 'amyotrophic lateral sclerosis'/exp/mj

#2: 'amyotrophic laterl sclerosis' OR 'als amyotrophic laterl sclerosis' OR 'als-amyotrophic laterl sclerosis' OR 'lou gehrig' OR 'motor neuron disease':ti,ab

#3: #1 OR #2

#4: 'clinical trial'/exp/mj

#5:'clinical trial' OR 'rct' OR 'open label' OR 'randomi\*':ti,ab

#6: #4 OR #5

#7: #3 AND #6

#8: #3 AND #6 AND [humans]/lim AND [english]/lim

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| **Supplementary Table 1. Included documents after full-text reading** |
| **Author (year)** | **Title** | **Journal** | **Reference** |
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| **Author (year)** | **Title** | **Journal** | **Reference** |
| Meininger V, Bensimon G, Bradley WR, et al. (2004) - study N 2 | Efficacy and safety of xaliproden in amyotrophic lateral sclerosis: results of two phase III trials. | Amyotrophic lateral sclerosis: official publication of the world federation of neurology research group on motor neuron diseases | 5;(2):107-117 |
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| Meininger V, Pradat PF, Corse A, et al. (2014) - study N 2 | Insufficient Evidence to Justify Phase III | Plos one | 9;(5):e97803 |
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| Miller R, Bradley W, Cudkowicz M, et al. (2007) | Phase II/III randomized trial of TCH346 in patients with ALS | Neurology | 69;(8):776-784 |
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| **Author (year)** | **Title** | **Journal** | **Reference** |
| Miller RG, Petajan JH, Bryan WW, et al. (1996) | A placebo-controlled trial of recombinant human ciliary neurotrophic (rhCNTF) factor in amyotrophic lateral sclerosis | Annals of neurology | 39;(2):256-260 |
| Miller RG, Shepherd R, Dao H et al. (1996) | Controlled trial of nimodipine in amyotrophic lateral sclerosis | Neuromuscular disord. | 6;(2):101-104 |
| Miller RG, Smith SA, Murphy JR, et al. (1996) | A clinical trial of verapamil in amyotrophic lateral sclerosis. | Muscle & nerve | 19;(4):511-515 |
| Miller RG, Zhang R, Bracci PM, et al. (2022) | Phase 2B randomized controlled trial of NP001 in amyotrophic lateral sclerosis: Pre-specified and post hoc analyses | Muscle & nerve | 66;(1):39-49 |
| Miller T, Cudkowicz M, Shaw PJ, et al. (2020) | Phase 1–2 Trial of Antisense Oligonucleotide Tofersen for SOD1 ALS | The new england journal of medicine | 383;(2):109-119 |
| Miller TM, Cudkowicz ME, Genge A, et al. (2022) | Trial of Antisense Oligonucleotide Tofersen for SOD1 ALS. | The new england journal of medicine | 387;(12):1099-1110 |
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| Pascuzzi RM, Shefner J, Chappell AS, et al. (2010)  | A phase II trial of talampanel in subjects with amyotrophic lateral sclerosis | Amyotrophic lateral scler. | 11;(3):266-271 |
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| Samadhiya S, Sardana V, Bhushan B, et al. (2022) | Assessment of therapeutic response of edaravone and riluzole combination therapy in amyotrophic lateral sclerosis patients | Ann. Indian acad. Neurol. | 25;(4):692-697 |
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| Schroder S, Wang M, Sima D, et al. (2022) | Slower progression of amyotrophic lateral sclerosis with external application of a Chinese herbal plasterâ€“The randomized, placebo-controlled triple-blinded ALS-CHEPLA trial | Front. Neurol. | 13 |
| Shefner J, Cedarbaum JM, Cudkowicz ME, et al. (2012) | Safety, tolerability and pharmacodynamics of a skeletal muscle activator in amyotrophic lateral sclerosis | Amyotrophic lateral scler | 13;430-438 |
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| Shefner JM, Cudkowicz ME, Hardiman O, et al. (2019) | A phase III trial of tirasemtiv as a potential treatment for amyotrophic lateral sclerosis | Amyotrophic lateral sclerosis & frontotemporal degeneration | 20;(7):584-594 |
| Shefner JM, Cudkowicz ME, Schoenfeld D, et al. (2004) | A clinical trial of creatine in ALS. | Neurology | 63;(9):1656-1661 |
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| Shefner JM, Watson ML, Meng L, et al. (2013) -study N 2 | A study to evaluate safety and tolerability of repeated doses of tirasemtiv in patients with amyotrophic lateral sclerosis  | Amyotrophic lateral sclerosis & frontotemporal degeneration | 14;574–581 |
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| Shibuya K, Misawa S, Kimura H, et al. (2015) | A single blind randomized controlled clinical trial of mexiletine in amyotrophic lateral sclerosis: Efficacy and safety of sodium channel blocker phase II trial. | Amyotrophic lateral sclerosis & frontotemporal degeneration | 16;(5):353-358 |
| Smith R, Pioro E, Myers K, et al. (2017) | Enhanced Bulbar Function in Amyotrophic Lateral Sclerosis: The Nuedexta Treatment Trial | Neurotherapeutics | 14;(3):762-772 |
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| Smith SA, Miller RG, Murphy JR and Ringel SP (1994) | Treatment of ALS with high dose pulse cyclophosphamide | J. Neurol. Sci. | 124;84-87 |
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| Sorarù G, Pegoraro E, Spinella P, et al. (2006) | A pilot trial with clenbuterol in amyotrophic lateral sclerosis | Amyotrophic lateral scler. | 7;(4):252-254 |
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| Tan E, Lynn DJ, Amato AA (1994) | Immunosuppressive Treatment of Motor Neuron Syndromes  | Archives of neurology | 51;194-200 |
| Tandan R, Bromberg MB, Forshew D, et al. (1996) | A controlled trial of amine acid therapy in amyotrophic lateral sclerosis: I. Clinical, functional, and maximum isometric torque data | Neurology | 47;(5):1220-1226 |
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| Trojsi F, Siciliano M, Passaniti C, et al. (2020) | Vitamin D supplementation has no effects on progression of motor dysfunction in amyotrophic lateral sclerosis (ALS). | European journal of clinical nutrition | 74;(1):167-175 |
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| Van Es MA, Van Eijk RPA, Bunte TM and Van Den Berg LH (2020) | A placebo-controlled trial to investigate the safety and efficacy of Penicillin G/Hydrocortisone in patients with ALS (PHALS trial). | Amyotrophic lateral sclerosis & frontotemporal degeneration | 21;(7):584-592 |
| Verstraete E, Veldink JH, Huisman MHB, et al. (2012) | Lithium lacks effect on survival in amyotrophic lateral sclerosis: A phase IIb randomised sequential trial | Journal of neurology, neurosurgery, and psychiatry | 83;(5):557-564 |
| Vucic S, Henderson RD, Mathers S, et al. (2021) | Safety and efficacy of dimethyl fumarate in ALS: randomised controlled study | Ann. Clin. Transl. Neurol. | 8;(10):1991-1999 |
| Wainger BJ, Macklin EA, Vucic S, et al. (2021) | Effect of Ezogabine on Cortical and Spinal Motor Neuron Excitability in Amyotrophic Lateral Sclerosis: A Randomized Clinical Trial. | Jama neurology | 78;(2):186-196 |
| Wang H, Larriviere KS, Keller KE, et al. (2008) | R+ pramipexole as a mitochondrially focused neuroprotectant: initial early phase studies in ALS. | Amyotrophic lateral sclerosis: official publication of the world federation of neurology research group on motor neuron diseases | 9;(1):50-58 |
| Weiss MD, Macklin EA, McIlduff CE, et al. (2021) | Effects of mexiletine on hyperexcitability in sporadic amyotrophic lateral sclerosis: Preliminary findings from a small phase II randomized controlled trial | Muscle & nerve | 63;(3):371-383 |
| Weiss MD, Macklin EA, Simmons Z, et al. (2016) | A randomized trial of mexiletine in ALS | Neurology | 86;(16):1474-1481 |
| Yoshino H and Kimura A (2006) | Investigation of the therapeutic effects of edaravone, a free radical scavenger, on amyotrophic lateral sclerosis (phase II study) | Amyotrophic lateral scler. | 7;(4):247-251 |
| Zhang Y, Wang L, Fu Y, et al. (2009)  | Preliminary investigation of effect of granulocyte colony stimulating factor on amyotrophic lateral sclerosis | Amyotrophic lateral scler. | 10;430-431 |
| Ziv I, Achiron A, Djaldetti R, et al. (1994) | Can nimodipine affect progression of motor neuron disease? A double-blind pilot study | Clin. Neuropharmacol. | 17;(5):423-428 |

**Supplementary table 2: List of excluded documents after full text reading**

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| **Author (year)** | **Title** | **Reference** | **Reason for Exclusion** |
| Berry JD, Cudkowicz ME, Windebank AJ, et al. (2019) | NurOwn, phase 2, randomized, clinical trial in patients with ALS: Safety, clinical, and biomarker results | Neurology 10;93(24):e2294-e2305 | wrong drug |
| Cashman N, Tan LY, Krieger C, et al. (2008) | Pilot study of granulocyte colony stimulating factor (G-CSF)-mobilized peripheral blood stem cells in amyotrophic lateral sclerosis (ALS) | Muscle Nerve 37(5):620-5 | wrong drug |
| Chiò A, Mora G, La Bella V, et al. (2011) | Repeated courses of granulocyte colony-stimulating factor in amyotrophic lateral sclerosis: clinical and biological results from a prospective multicenter study | Muscle Nerve 43(2):189-95 | wrong drug |
| Berry JD, Paganoni S, Atassi N, et al. (2017) | Phase IIa trial of fingolimod for amyotrophic lateral sclerosis demonstrates acceptable acute safety and tolerability | Muscle Nerve 56(6):1077-84 | wrong outcome |
| Conradi S, Ronnevi LO, Nise G, et al. (1982) | Long-time penicillamine-treatment in amyotrophic lateral sclerosis with parallel determination of lead in blood, plasma and urine | Acta Neurol Scand 65(3):203-11 | wrong outcome |
| Cudkowicz ME, Shefner JM, Simpson E, et al. (2008) | Arimoclomol at dosages up to 300 mg/day is well tolerated and safe in amyotrophic lateral sclerosis | Muscle Nerve 38(1):837-44 | wrong outcome |
| Ferrante KL, Shefner J, Zhang H, et al. (2005) | Tolerance of high-dose (3,000 mg/day) coenzyme Q10 in ALS | Neurology 65(11):1834-6 | wrong outcome |
| Lacomblez L, Bensimon G, Leigh PN, et al. (2002) | Long-term safety of riluzole in amyotrophic lateral sclerosis | Amyotroph Lateral Scler Other Motor Neuron Disord 3(1):23-9 | wrong outcome |
| Lange DJ, Shahbazi M, Silani V, et al. (2017) | Pyrimethamine significantly lowers cerebrospinal fluid Cu/Zn superoxide dismutase in amyotrophic lateral sclerosis patients with SOD1 mutations | Ann Neurol 81(6):837-84  | wrong outcome |
| Ochs G, Penn RD, York M, et al. (2000) | A phase I/II trial of recombinant methionyl human brain derived neurotrophic factor administered by intrathecal infusion to patients with amyotrophic lateral sclerosis | Amyotroph Lateral Scler Other Motor Neuron Disord 1(3):201-6 | wrong outcome |
| Parry GJ, Rodrigues CM, Aranha MM, et al. (2010) | Safety, tolerability, and cerebrospinal fluid penetration of ursodeoxycholic Acid in patients with amyotrophic lateral sclerosis | Clin Neuropharmacol 33(1):17-21 | wrong outcome |
| Pongratz D, Neundörfer B, Fischer W (2000) | German open label trial of riluzole 50 mg b.i.d. in treatment of amyotrophic lateral sclerosis (ALS) | J Neurol Sci 180(1-2):82-5 | wrong outcome |
| **Author (year)** | **Title** | **Reference** | **Reason for Exclusion** |
| Poutiainen E, Hokkanen L, Niemi ML, et al. (1994) | Reversible cognitive decline during high-dose alpha-interferon treatment | Pharmacol Biochem Behav 47(4): 901-5 | wrong outcome |
| Desai J, Sharief M, Swash M (1998) | Riluzole has no acute effect on motor unit parameters in ALS | J Neurol Sci 160 Suppl 1:S69-72 | wrong population |
| Goonetilleke A, Guiloff RJ (1995) | Continuous response variable trial design in motor neuron disease: long term treatment with a TRH analogue (RX77368) | J Neurol Neurosurg Psychiatry 58(2):201-8 | wrong population |
| Lipp A, Trottenberg T, Schink T, Kupsch A, et al. (2003) | A randomized trial of botulinum toxin A for treatment of drooling | Neurology 61(9):1279-81 | wrong population |
| Panitch HS, Thisted RA, Smith RA, et al. (2006) | Randomized, controlled trial of dextromethorphan/quinidine for pseudobulbar affect in multiple sclerosis | Ann Neurol 59(5):780-7  | wrong population |
| Porta M, Gamba M, Bertacchi G, et al. (2001) | Treatment of sialorrhea with ultrasound guided botulinum toxin type A injection in patients with neurological disorders | J Neurol Neurosurg Psychiatry 70(4):538-40 | wrong population |
| Vázquez-Costa JF, Máñez I, Alabajos A, et al. (2016) | Safety and efficacy of botulinum toxin A for the treatment of spasticity in amyotrophic lateral sclerosis: results of a pilot study  | J Neurol 263(10):1954-60 | wrong population  |
| Gordon PH, Moore DH, Gelinas DF, et al. (2004) | Placebo-controlled phase I/II studies of minocycline in amyotrophic lateral sclerosis | Neurology 62(10):1845-7 | wrong publication type |
| Johannesen S, Bogdahn U, Bruun T-H, et al. (2021) | Modeling and bioinformatics identify responders to G-CSF in patients with amyotrophic lateral sclerosis | J Neurol Sci 429 Article N° 119395 Suppl | wrong publication type |
| Verma A, Steele J (2006) | Botulinum toxin improves sialorrhea and quality of living in bulbar amyotrophic lateral sclerosis | Muscle Nerve 34(2):235-7 | wrong publication type |
| Blasco H, Patin F, Descat A, et al. (2018) | A pharmaco-metabolomics approach in a clinical trial of ALS: Identification of predictive markers of progression | PLoS One 13(6):e0198116 | wrong study type |
| Camu W, Mickunas M, Veyrune JL, et al. (2020) | Repeated 5-day cycles of low dose aldesleukin in amyotrophic lateral sclerosis (IMODALS): A phase 2a randomised, double-blind, placebo-controlled trial | EBioMedicine 59:102844 | wrong study type |
| Desiato MT, Palmieri MG, Giacomini P, et al. (1999) | The effect of riluzole in amyotrophic lateral sclerosis: a study with cortical stimulation | J Neurol Sci 169(1-2):98-107 | wrong study type |
| Engel WK, Siddique T, Nicoloff JT (1983) | Effect on weakness and spasticity in amyotrophic lateral sclerosis of thyrotropin-releasing hormone | Lancet 2(8341):73-5  | wrong study type |
| **Author (year)** | **Title** | **Reference** | **Reason for Exclusion** |
| Gold J, Rowe DB, Kiernan MC, et al. (2019) | Safety and tolerability of Triumeq in amyotrophic lateral sclerosis: the Lighthouse trial | Amyotroph Lateral Scler Frontotemporal Degener 20(7-8):595-604 | wrong study type |
| Nagase M, Yamamoto Y, Miyazaki Y, et al. (2016) | Increased oxidative stress in patients with amyotrophic lateral sclerosis and the effect of edaravone administration | Redox Rep 21(3):104-12  | wrong study type |
| Park JM, Kim SY, Park D, et al. (2020) | Effect of edaravone therapy in Korean amyotrophic lateral sclerosis (ALS) patients | Neurol Sci 41(1):119-123 | wrong study type |
| Restivo DA, Casabona A, Nicotra A, et al. (2013) | ALS dysphagia pathophysiology: differential botulinum toxin response | Neurology 2013 80(7):616-20 | wrong study type |
| Sojka P, Andersen PM, Forsgren L (1997) | Effects of riluzole on symptom progression in amyotrophic lateral sclerosis | Lancet 349(9046):176-7  | wrong study type |
| Sufit RL, Ajroud-Driss S, Casey P, et al. (2017) | Open label study to assess the safety of VM202 in subjects with amyotrophic lateral sclerosis | Amyotroph Lateral Scler Frontotemporal Degener 18(3-4):269-278 | wrong study type |
| Wong C, Dakin RS, Williamson J, et al. (2022) | Motor Neuron Disease Systematic Multi-Arm Adaptive Randomised Trial (MND-SMART): a multi-arm, multi-stage, adaptive, platform, phase III randomised, double-blind, placebo-controlled trial of repurposed drugs in motor neuron disease | BMJ Open 12(7):e064173 | wrong study type |
| Yamane K, Osawa M, Kobayashi I, et al. (1986) | Treatment of amyotrophic lateral sclerosis with thyrotropin-releasing hormone (TRH) | Jpn J Psychiatry Neurol 40(2):179-87 | wrong study type |
| Paracka L, Kollewe K, Klietz M, et al. (2019) | IncobotulinumtoxinA for hypersalivation in patients with amyotrophic lateral sclerosis: an open-label single-centre study | J Neural Transm (Vienna) 126(10):1341-5 | wrong study type  |
| Weishaupt JH, Bartels C, Pölking E, et al. (2006) | Reduced oxidative damage in ALS by high-dose enteral melatonin treatment | J Pineal Res 41(4):313-23  | wrong study type  |

**Supplementary Table N3. Drug name and number of studies** **with positive or negative results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drug Name** | **N positive results** | **N negative results** | **Total**  |
| **3,4 - DIAMMINOPIRIDINA (DAP)** | 2 | 1 | 3 |
| **4-IMMUNOSUPPRESSIVE DRUG REGIMEN** | 0 | 1 | 1 |
| **9-AMMINO- 1,2,3,4-TETRAIDROACRIDINA (THA)** | 0 | 1 | 1 |
| **ACETILCISTEINE** | 0 | 1 | 1 |
| **ACETYL-L-CARNITINE** | 1 | 0 | 1 |
| **ALPHA-TOCOPHEROL (Vit E)** | 0 | 2 | 2 |
| **AMINOPHYLLINE** | 1 | 0 | 1 |
| **ANAKINRA** | 0 | 1 | 1 |
| **ARIMOCLOMOL** | 1 | 0 | 1 |
| **BACLOFEN** | 0 | 1 | 1 |
| **BDNF** | 0 | 2 | 2 |
| **BIOTINE (MD1003)** | 1 | 0 | 1 |
| **BRAINOIL**  | 1 | 0 | 1 |
| **BRANCHED-CHAIN AMINO ACIDS** | 1 | 3 | 4 |
| **BROMCRIPTINA** | 1 | 0 | 1 |
| **CEFTRIAXONE** | 0 | 2 | 2 |
| **CELECOXIB** | 0 | 1 | 1 |
| **CELECOXIB + CIPROFLOXACIN** | 1 | 0 | 1 |
| **CICLOFOSFAMIDE** | 1 | 1 | 2 |
| **CK-2017357** | 1 | 0 | 1 |
| **CLENBUTEROL** | 1 | 0 | 1 |
| **COLECALCIFEROLO** | 0 | 1 | 1 |
| **COQ10** | 0 | 2 | 2 |
| **CORTICOTROPINA + CICLOFOSFAMIDE** | 0 | 1 | 1 |
| **CREATINE** | 1 | 4 | 5 |
| **CYCLOSPORINE** | 0 | 1 | 1 |
| **DEFERIPRONE** | 0 | 1 | 1 |
| **DELTA-9-TETRAHYDROCANNABINOL + CANNABIDIOL** | 1 | 0 | 1 |
| **DESTRAN SOLFATO** | 2 | 0 | 2 |
| **DESTROMETORFANO** | 0 | 3 | 3 |
| **DEXPRAMIPEXOLE** | 1 | 1 | 2 |
| **DIMETHYLFUMARATE** | 0 | 1 | 1 |
| **DL-3-N-BUTYLPHTIALIDE (NBP)** | 0 | 1 | 1 |
| **DN-1417** | 0 | 1 | 1 |
| **EDARAVONE** | 3 | 2 | 5 |
| **ELYSIUM HEALTH’S CANDIDATE DRUG EH301** | 1 | 0 | 1 |
| **ERITROPOIETINA UMANA RICOMBINANTE (RHEPO)** | 1 | 1 | 2 |
| **EZOGABINE** | 1 | 0 | 1 |
| **FISOSTIGMINA** | 0 | 1 | 1 |
| **FLECAINIDE** | 0 | 1 | 1 |
| **GABAPENTIN** | 1 | 2 | 3 |
| **GANGLIOSIDI** | 0 | 4 | 4 |
| **GLATIRAMER ACETATE** | 1 | 1 | 2 |
| **GLUTATHIONE PEROXIDASE** | 1 | 0 | 1 |
| **GLUTATIONE RIDOTTO (GSH)** | 0 | 1 | 1 |
| **GM604** | 0 | 1 | 1 |
| **GRANULOCYTE-COLONY STIMULATING FACTOR (G-CSF)** | 1 | 2 | 3 |
| **GROWTH HORMON** | 0 | 1 | 1 |
| **GUANABENZ** | 1 | 0 | 1 |
| **GUANIDINE**  | 1 | 0 | 1 |
| **GUANIDINE O AMANTDINE** | 0 | 1 | 1 |
| **HUMAN LEUCOCYTE INTERFERON (IFN)** | 0 | 3 | 3 |
| **IFNB-1A** | 0 | 1 | 1 |
| **IMMUNOGLOBULINE** | 0 | 2 | 2 |
| **INDINAVIR** | 0 | 1 | 1 |
| **INOSINE** | 1 | 0 | 1 |
| **INOSITOLE (Vit B7)** | 0 | 1 | 1 |
| **INSULIN-LIKE GROWTH FACTOR-1 (IGF-1)** | 1 | 1 | 2 |
| **ISOPRINOSINA** | 0 | 1 | 1 |
| **JI WU LI**  | 1 | 0 | 1 |
| **JWSJZ DECOCTION** | 0 | 1 | 1 |
| **LAMOTRIGINE** | 0 | 2 | 2 |
| **L-DEPRENYL** | 0 | 1 | 1 |
| **LECITINE** | 0 | 1 | 1 |
| **LEVAMISOLE** | 0 | 1 | 1 |
| **LEVOSIMENDAN** | 0 | 2 | 2 |
| **LITHIUM CARBONATE** | 1 | 5 | 6 |
| **LITHIUM CARBONATE + VALPROIC ACID** | 1 | 0 | 1 |
| **L-TREONINA** | 0 | 2 | 2 |
| **LUNASIN** | 0 | 1 | 1 |
| **MASITINIB** | 1 | 0 | 1 |
| **MEMANTINE** | 1 | 1 | 2 |
| **METILCOBALAMINA** | 2 | 1 | 3 |
| **METILPREDNISOLONE + PREDNISONE; THAN CICLOFOSFAMIDE** | 0 | 1 | 1 |
| **MEXILETINE** | 2 | 1 | 3 |
| **MILK WHEY PROTEINS** | 0 | 1 | 1 |
| **MINOCICLINA** | 1 | 1 | 2 |
| **MINOCICLINA + CREATINA (MC) E CELECOXIB + CREATINA (CC)** | 1 | 0 | 1 |
| **MODIFIED NEUROTOXIN** | 0 | 1 | 1 |
| **MODIFIED VENOM SNAKE** | 0 | 1 | 1 |
| **MORFINA** | 1 | 0 | 1 |
| **NANOCURCUMINA** | 1 | 0 | 1 |
| **NEOSTIGMINE AND PHYSOSTIGMINE** | 0 | 1 | 1 |
| **NIMODIPINA** | 0 | 2 | 2 |
| **NP001** | 0 | 1 | 1 |
| **NUEDEXTA (DMQ)** | 1 | 0 | 1 |
| **OCTACOSANOL** | 0 | 1 | 1 |
| **OLESOXIME** | 0 | 1 | 1 |
| **ORG 2766** | 0 | 1 | 1 |
| **OZANEZUMAB** | 0 | 3 | 3 |
| **PENGH** | 0 | 1 | 1 |
| **PENTOXIFYLLINE** | 0 | 1 | 1 |
| **PERAMPANEL** | 0 | 2 | 2 |
| **PIMOZIDE** | 0 | 1 | 1 |
| **PIOGLITAZONE** | 0 | 1 | 1 |
| **PURIFIED CHLORITE** | 0 | 1 | 1 |
| **R(+) PRAMIPEXOLO** | 0 | 1 | 1 |
| **RANOLAZINA** | 1 | 0 | 1 |
| **RASAGILINA** | 0 | 3 | 3 |
| **RECOMBINANT HUMAN CILIARY NEUROTROPHIC FACTOR (RHCNTF)** | 0 | 2 | 2 |
| **RECOMBINANT HUMAN LEUKOCYTE ALPHA-2 INTERFERON** | 0 | 1 | 1 |
| **RECOMBINANT INSULIN-LIKE GROWTH FACTOR I (RHIGF-1)** | 2 | 1 | 3 |
| **RECOMBINANT METHIONYL HUMAN BRAIN DERIVED NEUROTROPHIC FACTOR (R-METHUBDNF)** | 0 | 1 | 1 |
| **RELDESEMTIV** | 0 | 1 | 1 |
| **RETIGABINA** | 1 | 0 | 1 |
| **RHGH** | 0 | 1 | 1 |
| **RILUZOLE** | 5 | 2 | 7 |
| **ROPINIROLE HYDROCHLORIDE** | 1 | 0 | 1 |
| **RX77368** | 1 | 1 | 2 |
| **SELEGILINA** | 0 | 2 | 2 |
| **SODIO FENILBUTIRATO** | 1 | 0 | 1 |
| **SODIUM PHENYLBUTYRATE-TAURURSODIOL** | 1 | 0 | 1 |
| **TALAMPANEL** | 0 | 1 | 1 |
| **TALIDOMIDE** | 0 | 2 | 2 |
| **TAMOXIFEN** | 0 | 1 | 1 |
| **TAMOXIFENE, CREATINA** | 1 | 0 | 1 |
| **TAUROURSODEOXYCHOLIC ACID (TUDCA)** | 1 | 0 | 1 |
| **TCH346** | 0 | 1 | 1 |
| **TEOFILLINE** | 1 | 0 | 1 |
| **TESTOSTERONE CYPIONATE** | 0 | 1 | 1 |
| **TILORONE** | 0 | 1 | 1 |
| **TIRASEMTIV** | 2 | 2 | 4 |
| **TOCILIZUMAB** | 1 | 0 | 1 |
| **TOFERSEN** | 0 | 2 | 2 |
| **TOPIRAMATE** | 0 | 1 | 1 |
| **TRANSFER FACTOR** | 0 | 1 | 1 |
| **TRH (THYROTROPIN RELEASING HORMONE)** | 1 | 9 | 10 |
| **UDCA** | 1 | 0 | 1 |
| **VALPROIC ACID** | 0 | 1 | 1 |
| **VERAPAMIL** | 0 | 1 | 1 |
| **XALIPRODEN** | 1 | 2 | 3 |
| **Total** | **68** | **145** | **213** |

**Supplementary table N 4.** **Mechanism of action, drugs and results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Mechanisms** | **Drug** | **N positive results** | **N negative results** |
| Acetylcholinesterase inhibitor | 9-ammino-1,2,3,4-tetraidroacridina; fisostigmine; neostigmine | 0 | 3 |
| Activator of fast troponin complex | CK-2017357; reldesemtiv; tirasemtiv | 3 | 3 |
| Apoptosis | DL-3-N-butylphtialide; GM604; indinavir; minocycline; pentoxyfilline; rasagilina; sodium phenylbutyrate; TCH-346; TUDCA; UDCA | 4 | 10 |
| Autophagy | lithium carbonate | 2 | 5 |
| Bronchodilator | aminophylline; clenbuterol | 2 | 0 |
| Calcium channel blocker | pimozide; verapamil | 0 | 2 |
| D2 receptor agonist | bromocriptine; ropinirole hydrochloride | 2 | 0 |
| Decrease Endoplasmic reticulum stress | amantadine; guanabenz | 1 | 1 |
| Epigenetic /Genetic defects | lunasin; sodium phenylbutirate; tofersen; valproic acid | 1 | 4 |
| Excitotoxicity | branched-chain amino acids; ceftriaxone; dextromethorphane; gabapentin; JWSJZ decoction; lamotrigine; memantine; nimodipine; nuedexta; riluzole; talampanel | 9 | 20 |
| GABA agonist | baclofen; topiramate | 0 | 2 |
| GABA antagonist | PENGH | 0 | 1 |
| Growth factors | destran solfato; DN-1417; gangliosides; growth hormone; octacosanol; RX77368; thyrotropin releasing hormone | 4 | 17 |
| Immunomodulator | 4- Immunosuppressive drug regimen; IFN; IFNB-1A; immunoglobuline; isoprinosine; recombinant human leukocyte alpha-2 interferon; tilorone; tocilizumab | 1 | 10 |
| Iron chelator | deferiprone | 0 | 1 |
| MAO-B inhibitor | L-deprenyl; Selegiline | 0 | 3 |
| Metabolic dysfunction | inositole; L-threonine | 0 | 3 |
| Mitochondrial dysfunction | acetyl-L-carnitine; biotina (MD1003); creatine; dexpramipexole; DL-3-N-butylphtialide; EH301; olesoxime  | 5 | 7 |
| Neuroinflammation | anakinra; celecoxib; cholecalciferol; corticotropina; cyclophosphamide; dimethylfumarate; DL-3-N-butylphtialide; glatiramer acetate; GM604; JWSJZ decoction; levamisole; masitinib; metilprednisolone; minocycline; NP001; ORG 2766; pioglitazone; prednisone; purified chlorite; tamoxifen; thalidomide; UDCA | 5 | 20 |
| Neuroprotective | Recombinant-Human Erythropoietin | 1 | 1 |
| Neurotrophic factors | BDNF; G-CSF; GM604; IGF-1; ozanezumab; RH-CNTF; xaliproden | 3 | 13 |
| Oxidative stress | acetylcysteine; alpha-tocopherol; brainoil; cholecalciferol; CoQ10; DL-3-N-butylphtialide; edaravone; inosine; methilcobalamine; nanocurcumina; R(+) pramipexolo; rasagilina; reduced glutathione; UDCA | 9 | 15 |
| Palliative care | morphine | 1 | 0 |
| Potassium channel activator | ezogabine; levosimendan; retigabina | 2 | 2 |
| Potassium channel blocker | 3,4 - Diaminopyridine; guanidine | 2 | 0 |
| Proteinopathy | arimoclomol | 1 | 0 |
| Sodium channel blocker | flecainide; mexiletine; ranolazina | 3 | 2 |
| Other | Ji Wu Li; lecitine; milk whey proteins; modified neurotoxin; modified snake venom; teophylline; testosterone cypionate; transfer factor | 2 | 6 |