**Response**

Anakinra is a recombinant produced Interleukin-1 receptor antagonist. This gives Anakinra anti-

**Merit Cudkowicz**

- **Study Title:** 80 200mg/3 times per day for 12 months 12 mesi
- **Phase:** Rate of decline of ALSFRS-R over a period of 12 months
- **Time Frame:** gen-09 dec-16 aug-14

**Arimoclomol**

- **Study Title:** A Phase II/III Randomized, Placebo-controlled Trial of Arimoclomol at dosages up to 300 mg/day is well tolerated and safe in amyotrophic lateral sclerosis.
- **Cudkowicz ME, Shefner JM, Simpson E, Grasso D, Yu H, Zhang H, Shui A, Schoenfeld D, Brown RH, Wieland S**
- **Study of Arimoclomol in Amyotrophic Lateral Sclerosis Completed NCT00244244 II Interventional Randomized Safety/Efficacy Double blind Treatment**
- **Merit Cudkowicz**
- **Ono Pharma UK**
- **15 ONO-2506PO in the presence of Riluzole 1200mg QD / 5 years 5 years**
- **Adverse Events [Time Frame: Oct 2013 jun-08 dec-08 jun-12**

**Ceftriaxone**

- **A semi-synthetic, third generation cephalosporin antibiotic—may increase the level of a protein that decreases glutamate uptake.CEF increases EAAT2 transcription in primary human fetal astrocytes through the NF-κB signaling pathway. - J Cell Mol Med. 2009 Aug;66(2):235-44. Phase II trial of CoQ10 for ALS finds insufficient evidence to justify phase III.**

**Coenzyme Q10**

- **for its antioxidant properties, has prolonged survival in the mouse model of ALS.**
- **An Neurol. 2009 Aug;66(2):235-44. Phase II trial of CoQ10 for ALS finds insufficient evidence to justify phase III.**
- **Kaufmann P, Thompson JL - CoQ10 at 2,700 mg daily for 9 months shows insufficient promise to warrant Phase III.**

**Creatine**

- **A mitochondrial cofactor known for its antioxidant properties, has prolonged survival in the mouse model of ALS.**
- **Neurology. 2004 Nov 9;63(9):1656-61. A clinical trial of creatine in ALS.**
- **Patterson T, Tandan R, Mitsumoto H, Rothstein J, Smith-Palmer T, MacDonald D, Burke D; NEALS Consortium.**
- **CONCLUSION:Any beneficial effect of creatine at 5 g per day in ALS must be small. Other agents should be evaluated.**
- **Muscular Dystrophy Association USA 114**

**Dexpramipexole**

- **Dexpramipexole was safe and well tolerated. Trends showing a dose-dependent attenuation of the slope of decline of the ALS Functional Rating Scale-Revised (ALSFRS-R) in part 1 and a statistically significant (P = 0.046) enhancement of the slope of change in upper extremity motor function after 6 months of experimental therapy as tested with the Tufts Quantitative Neuromuscular Exam.**
- **The effects of dexpramipexole (KNS-760704) in individuals with amyotrophic lateral sclerosis.**
- **Nat Med. 2011 Nov 20;17(12):1652-6. doi: 10.1038/nm.2579.**
- **The primary objective of the study is to extend the Long-Term Safety and Efficacy of Dexpramipexole KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **Ann Neurol. 2009 Aug;66(2):235-44. Phase II trial of CoQ10 for ALS finds insufficient evidence to justify phase III.**
- **Kaufmann P, Thompson JL - CoQ10 at 2,700 mg daily for 9 months shows insufficient promise to warrant Phase III.**

**Pharmacokinetics**

- **Healthy volunteers will be matched to each category of renal impaired subjects.**
- **246**

**Pharmacodynamics**

- **The primary objective of the study is to extend the Long-Term Safety and Efficacy of Dexpramipexole KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **Ann Neurol. 2009 Aug;66(2):235-44. Phase II trial of CoQ10 for ALS finds insufficient evidence to justify phase III.**
- **Kaufmann P, Thompson JL - CoQ10 at 2,700 mg daily for 9 months shows insufficient promise to warrant Phase III.**

**Pharmacology**

- **The primary objective of the study is to extend the Long-Term Safety and Efficacy of Dexpramipexole KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **Ann Neurol. 2009 Aug;66(2):235-44. Phase II trial of CoQ10 for ALS finds insufficient evidence to justify phase III.**
- **Kaufmann P, Thompson JL - CoQ10 at 2,700 mg daily for 9 months shows insufficient promise to warrant Phase III.**

**Pharmacotherapy**

- **The primary objective of the study is to extend the Long-Term Safety and Efficacy of Dexpramipexole KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **KNS-760704 in Patients With Amyotrophic Lateral Sclerosis.**
- **Ann Neurol. 2009 Aug;66(2):235-44. Phase II trial of CoQ10 for ALS finds insufficient evidence to justify phase III.**
- **Kaufmann P, Thompson JL - CoQ10 at 2,700 mg daily for 9 months shows insufficient promise to warrant Phase III.**
Pharmacokinetics and Nitrative-Oxidative Stress Pharmacodynamics in Amyotrophic Lateral Sclerosis Subjects Taking Daily High-Dose R(+) Pramipexole Dihydrochloride for Six Months

R(+) pramipexole dihydrochloride plasma levels. These findings support longer-term testing of higher R+PPX doses as a potential disease-altering treatment.


Conclusions:
Efficacy Open label Treatment
Peking University Third Hospital China Dongsheng Fan, MD, Ph.D

GM604 30mg twice a day, intravenous for 14 days. 3 times (2nd-6th cycles).

The patients’ will.

Edaravone markedly reduced to almost undetectable levels at the end of the six-month treatment period. Data from the present study suggest that edaravone, Radicut is currently being used in Japan to treat people who suffered a stroke.

Fasudil 30mg twice a day, intravenous for 14 days. 3

G-CSF administration were significantly less than those measured prior to the treatment. The results suggest G-CSF is safe in ALS patients, and may affect the rate of motor decline.

Granulocyte-Colony Stimulating Factor Treatment for Amyotrophic Lateral Sclerosis (ALS)

Zhang Y, Wang L, Fu Y, Song H, Zhao H, Deng M, Zhang J, Fan D. Declines of ALSFRS and CMAP amplitude after G-CSF administration were significantly less than those measured prior to the treatment. The results suggest G-CSF is safe in ALS patients, and may affect the rate of motor decline.

Completed NCT00330681 III Interventional Randomized Safety/Efficacy Double blind Treatment Mitsubishi Tanabe Pharma Corporation Japan Koji Abe

206 patients with amyotrophic lateral sclerosis (ALS) were recruited into a randomized, double-blind placebo-controlled trial investigating the potential antiamyotrophic effects of the free radical scavenger, Radicut. Patients were randomized to receive either intravenous Edaravone (Radicut) or placebo over a 6-month period

Completed NCT00600873 I/II Interventional Non-randomized Safety/Efficacy Open label Treatment Bennett, James P., Jr., M.D., Ph.D University of Pittsburgh USA Lawrence H Phillips

30 mg/day over 6 months

ALS-FRSr score taken each month for 3 months during 24 months

dec-11 mar-15 aug-14

Interleukin-2


Interleukin-2


Capsules that contain 150 milligrams (mg) lithium carbonate. Participants will be randomized to lithium/riluzole or placebo/riluzole and treated for 52

Insulin-like growth factor-1


3,5 years Survival rate Functional rating scale every 3 months

dec-14 apr-07 mar-14

A Multinational, Multicenter, Randomized, Double-Blind, Placebo-Controlled, 6 Month Clinical Trial Followed by an Open-label Extension in Patients With Amyotrophic Lateral Sclerosis

A Single-center, Randomized, Double-blind, Placebo-controlled, 6 Month Clinical Trial Followed by an Open-label Extension in Patients With Amyotrophic Lateral Sclerosis (ALS)

The mechanism of action for glatiramer is unknown, although several have been proposed (anti-inflammatory, neuroprotective actions have been demonstrated in preclinical and clinical study results and provide the rationale for its use. GlaxoSmithKline funded the study.

Glatiramer acetate (Copaxone), a basic protein. The mechanism of action for glatiramer is unknown, although several have been proposed (anti-inflammatory, immunomodulating drug.

Basic Protein in the Treatment of Amyotrophic Lateral Sclerosis: A Randomized Trial


A Randomized Trial


In an ongoing safety trial of neural stem cell injections into the spinal cord of patients with ALS at Emory University, Atlanta,
The effects of memantine in treating amyotrophic lateral sclerosis (ALS) have been studied extensively. In a randomized, placebo-controlled trial of memantine for functional disability in ALS, de Carvalho et al. (2009) found that memantine showed no significant improvement in functional disability compared to placebo. The results of this study show that memantine may not be effective in slowing the progression of ALS.

Other studies have explored the use of specific treatments for ALS, such as minocycline and sodium phenylbutyrate. In a study by Eudie et al. (2014), minocycline was found to improve bulbar function in ALS patients, primarily speech and swallowing. However, the mechanism of this effect is conjectural and likely due to a direct effect on motor neurons.

Sodium phenylbutyrate has also been studied as a potential treatment for ALS. In a phase 2 study by NaPB Research Group (2009), sodium phenylbutyrate was found to be safe and well-tolerated over 20 weeks of treatment. The primary endpoint was not met, but the results suggest that sodium phenylbutyrate may have some benefit in ALS.

Other drugs, such as pioglitazone, have been used in treating ALS. In a study by Wang et al. (2012), pioglitazone was found to be safe and effective in slowing the rate of functional decline in ALS patients. However, the exact mechanism of action of pioglitazone in ALS is not yet fully understood.

Future research is needed to further understand the mechanisms of action of these drugs in treating ALS, as well as to identify new treatments for this debilitating disease.
Responder patients were defined as those subjects showing an improvement of at least 15% in the ALSFRS-R.

Antioxidant, antiapoptotic and neuroprotective properties of TUDCA in the central nervous system (CNS), both in vitro and in vivo.

Add on Treatment in Patients Affected by Amyotrophic Lateral Sclerosis. 2009 Oct-Dec;10(5-6):393-404.

To evaluate the effect of Thalidomide in the rate of morning sickness but later withdrawn because of resulting birth defects, thalidomide is currently being used in combination with the steroid dexamethasone to treat multiple myeloma.

Thalidomide will start at a dose of 100mg/day, dose escalated every 2 weeks by 100mg/day to a target dose of 400mg/day.

The rationale for this study is based on the anti-inflammatory properties of thalidomide through the modulation of inflammatory progression and can cause adverse effects.


The change from baseline to the average of the ALS Functional Rating Scale-Revised (ALSFRS-R) total score on days -7, -4, 0, 7, 14, 21, 28, 35, 42.

Thalidomide can improve motor function and prolong survival in patients with ALS. [Time Frame: 2 days]


Shefner JM, Watson ML, Meng L, Wolff AA; Neals/Cytokinetics STUDY Team. In conclusion, tirasemtiv is well tolerated and can be given safely with a reduced dose of riluzole. Positive trends in multiple outcomes were observed, including an increase in muscle force. [Time Frame: 2 days]