Enhancement of Cognitive Function in Aged Canines with Apoaequorin, a Calcium Binding Protein

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INTRODUCTION

Cognitive dysfunction syndrome (CDS) is a neurobehavioral disorder that occurs in aged canines. The disorder is caused by age-related neuronal changes in the brains of canines. The changes result in cognitive decline, which can manifest as disorientation, confusion, soiling, alterations in sleep or activity, new phobias or fears, and increased sensitivity to stimuli. CDS is a common problem in aged canines and is often associated with age-related neuropathology and cognitive decline. Apoaequorin is a calcium binding protein that has been shown to have potential therapeutic benefits in the treatment of cognitive decline in aged canines.

METHODS

The study was a blinded, parallel group design with a total of 20 aged Beagles divided into three treatment groups: placebo, low (2.5 mg) and high (5 mg) dose of Apoaequorin. The groups were administered the compound (PO in tablets) from Day 0 to Day 32. During this period, the treatment groups were blinded to the treatment received. The first experiment looked at the effect of Apoaequorin in 2.5 mg and 5 mg doses compared to placebo. Cognitive testing was performed on Days 3 to 32. The second experiment looked at the effect of Apoaequorin in 5 mg doses compared to Anipryl® (Selegiline hydrochloride), dosed at 1 mg/kg. Anipryl® is a compound that has received regulatory approval for treatment of CDS and was therefore used as a positive control.

RESULTS

The results revealed statistically significant impacts on both cognitive status and age were taken into consideration. The high (5 mg) dose of Apoaequorin was more effective than the low (2.5 mg) dose when compared with the control group. The difference between the low dose and Apoaequorin group was marginally significant (p=0.093).

CONCLUSION

These results demonstrate learning and performance improvements from use of Apoaequorin in an aged canine model on a selective attention task. These results suggest that Apoaequorin binding protein Apoaequorin is effective in promoting synaptic plasticity and learning abilities. The results for these studies can be used to identify a maximally effective dose. The results demonstrate that Apoaequorin has significant beneficial effects by showing improved performance over a placebo control group on an aged canine model of Alzheimer’s disease.

REFERENCES