RESEARCH ABSTRACT

HUMAN NUTRITION

**Title:** Effect of a High Protein Diet on 24-hr Profile of Ghrelin, GH and IGF-1, #08-017

**Investigators:** Mary C. Gannon, Ph.D. and Frank Q. Nuttall, M.D., Ph.D.

**Institutions**: Minneapolis VA Medical Center/Minnesota Veterans Research Institute, and the University of Minnesota

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**Scientific Abstract:**

**Background:** We previously reported that a weight-maintenance, non-ketogenic diet containing 30% carbohydrate (CHO), 30% protein, 40% fat, (30:30:40) ($LoBAG_{30}$), ingested for 5 weeks, resulted in an increase in the A.M. fasting insulin-like growth factor-1 (IGF-1) and a positive nitrogen balance, in addition to improving glucose control, in subjects with untreated type 2 diabetes.
**Objective:** The objective of the present study was to determine whether a $LoBAG_{30}$ diet ingested by an elderly population would ameliorate the sarcopenia of aging by resulting in: 1) an increase in the 24 hour integrated IGF-1: 2) an increase in the 24 hour integrated growth hormone: 3) an increased and prolonged elevation in essential amino acids, particularly the branched chain amino acids, and 4) and increase in lean body mass.
**Design:** Eight men, age 52-70, with untreated type 2 diabetes were studied using a randomized crossover diet design with a washout period in between. Blood was drawn and urine was collected over a 24 hour period before and after 5 weeks following ingestion a standard diet of 55% CHO, 15% Pro, 30% fat, and before and after 5 weeks of ingesting a $LoBAG_{30}$ diet.
**Results:** Fasting IGF-1 was significantly increased following 5 weeks on a $LoBAG_{30}$ diet, however, the 24 hour integrated area response was not. Growth hormone concentrations were not increased. The leucine, isoleucine, and valine concentrations were elevated to a greater extent and for a longer period of time when subjects ingested the $LoBAG_{30}$ diet. Lean body mass was little changed.
**Conclusions:** A $LoBAG_{30}$ diet may be beneficial in ameliorating the sarcopenia of aging based on a prolonged elevation in branched chain amino acids, and an increase in IGF-1. However, it is likely that longer-term studies are necessary to demonstrate a change in lean body mass, and thus prove this hypothesis. In the present study, there were no deleterious changes in lipid profile or kidney function after 5 weeks on a high protein diet.