

# HEART-HEALTHY, HIGHER PROTEIN DIETS WITH LEAN BEEF HELP IMPROVE BLOOD PRESSURE & VASCULAR HEALTH

Effects of a DASH-like diet containing lean beef on vascular health  
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## Objective

Study the effect of DASH-like diets that provided different amounts of protein from lean beef on blood pressure, endothelial function and vascular reactivity versus a healthy American diet (HAD).

## Study Design and Setting

A 4-period, randomized, crossover, controlled feeding design. Subjects were randomly assigned to a treatment (diet) order, and consumed each diet (HAD: 33% total fat, 12% SFA, 17% protein, 20g beef/d; DASH: 27% total fat, 6% SFA, 18% protein, 28g beef/d; BOLD: 28% total fat, 6% SFA, 19% protein, 113g beef/d; and BOLD+: 28% total fat, 6% SFA, 27% protein, 153g beef/d) for 5 weeks. The diet periods were separated by a brief compliance break (average 1 week).

## Participants

Thirty-six nonsmoking normo- (SBP,  $116 \pm 3.6$  mmHg) or pre- (BP  $< 140/90$  mmHg) hypertensive men and women (30–65 years) with moderately elevated low-density lipoprotein cholesterol ( $110$ – $176$  mg/dl) were recruited.

### Additional inclusion criteria:

- Body mass index ( $18.5$ – $37$  kg/m<sup>2</sup>)
- Fasting triglycerides  $< 350$  mg/dl

### Exclusion criteria:

- Established CVD
- Stroke
- Diabetes
- Liver, kidney or autoimmune disease
- The use of cholesterol/lipid-lowering medication or supplements (psyllium, fish oil, soy lecithin and phytoestrogens)
- Being pregnant or lactating
- Experiencing weight loss of  $\geq 10\%$  of body weight within the 6 months before enrolling in the study
- Vegetarianism

## Results

- Systolic blood pressure (SBP) was significantly reduced in subjects on the BOLD+ diet ( $111.4 \pm 1.9$  mmHg) versus HAD ( $115.7 \pm 1.9$ ).
- Augmentation index, a marker of arterial status, was significantly reduced in participants on the BOLD diet ( $-4.1\%$ ).
- A moderate protein DASH-like diet including lean beef decreased SBP in normotensive individuals.
- The inclusion of lean beef in a heart healthy diet also reduced peripheral vascular constriction.

## CONCLUSIONS

These results suggest that total protein and not type of protein is important for eliciting reductions in systolic blood pressure.