

Effects of dietary protein and soluble fibre on ambulatory blood pressure in treated hypertensives: a randomised controlled trial

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Background: Recent population studies suggest that a diet high in protein is associated with lower blood pressure (BP), with a possible additional role for fibre consumption.

Methods: In a randomized controlled trial, treated hypertensive patients changed for 4 weeks (familiarisation) to a diet low in protein (12.5% energy) and fibre (15g/day). Patients (n=41) were then randomized to a factorial study of parallel design in which they continued the low protein, low fibre diet alone or had supplements of soy protein to increase protein intake to 25% energy, 15g/day of psyllium, providing 12g/day of soluble fibre, or both, for a further 8 weeks. Ambulatory BP was measured over 24 hours at baseline, at the end of familiarisation and at the end of intervention.

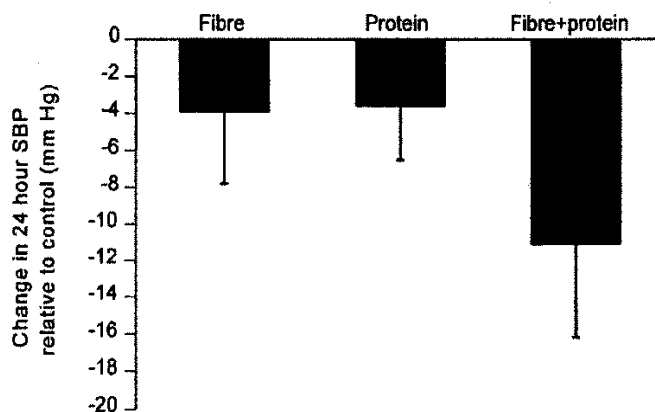


Figure 1: Change in mean 24 hour systolic blood pressure relative to control group

Results: In the 36 subjects who completed the study, there were significant independent effects of protein (p=.034) and fibre (p=.041) on mean 24 hour systolic BP (SBP) without significant interaction. Relative to the low fibre, low protein group (controls) mean 24 hour SBP was lower by 7.1 mm Hg (95% CL -13.3, -0.8) with protein treatment and by 6.0 mm Hg (95% CL -12.2, -0.24) in association with fibre (Figure 1). Changes in DBP and heart rate were not significant. Mean 24 hour diastolic BP (DBP), was lower than controls by 3.1 mm Hg (95%CL -6.9, 0.7) associated with protein treatment and by 1.9 mm Hg (95% CI -5.1, 1.8) with fibre treatment. Heart rate was greater than the control group by 2.7 bpm (95% CL -5.0, 6.1) in association with fibre and lower by 3.0 bpm (95% CL -8.6, 2.6) with the protein treatment. Changes were independent of weight, age, sex, alcohol intake and urinary sodium excretion.

Conclusion: Relative to a diet low in fibre and protein, increased dietary protein and increased soluble fibre are independently associated with lower BP. These findings have important implications for health promotion, particularly in populations where high blood pressure is prevalent in association with diets low in protein and fibre.