

Biophenol-rich Pomegranate extract intake inhibits salivary cortisol and 11 β HSD1 activity and improves overall quality of life scores in healthy volunteers: a 4-week randomised, double-blind, placebo-controlled trial



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Background and Objectives:

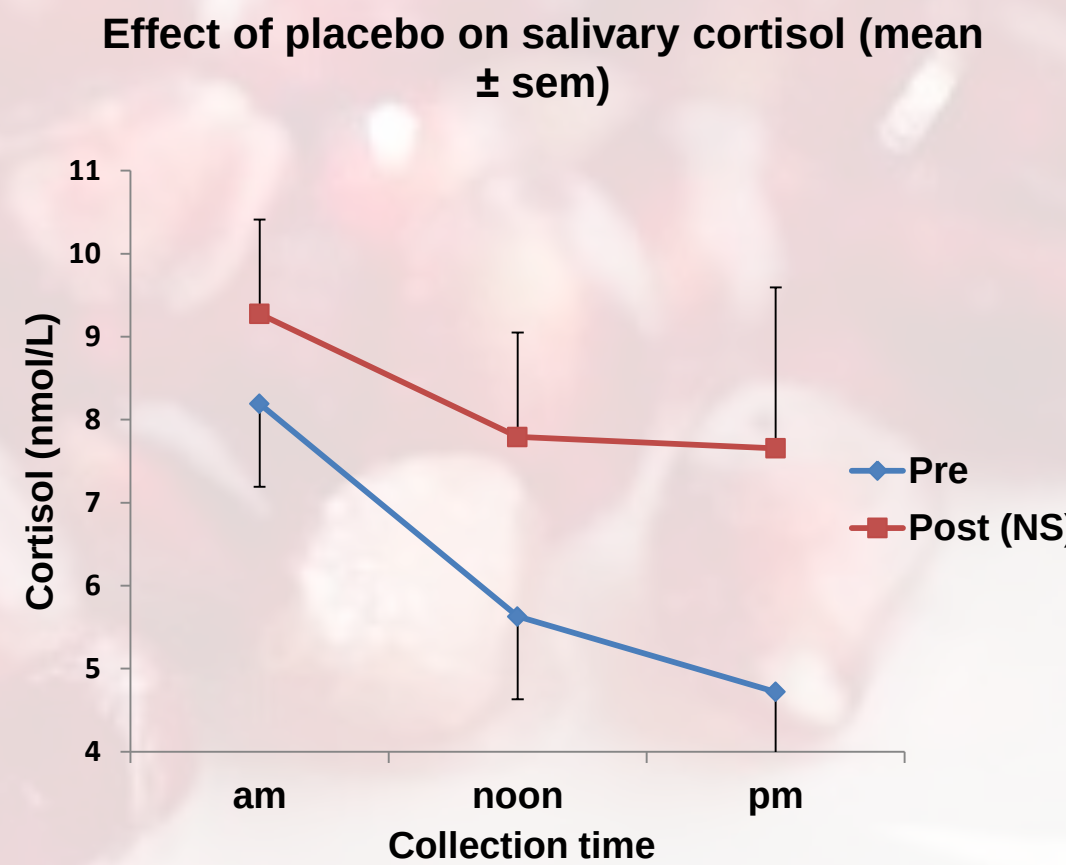
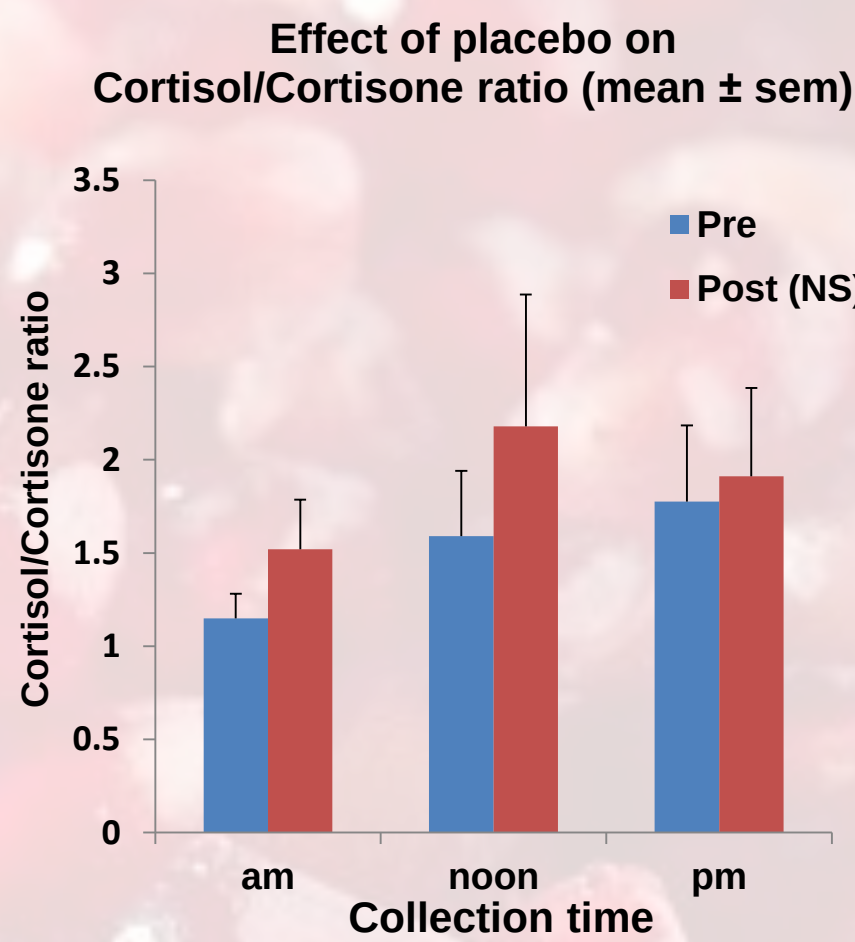
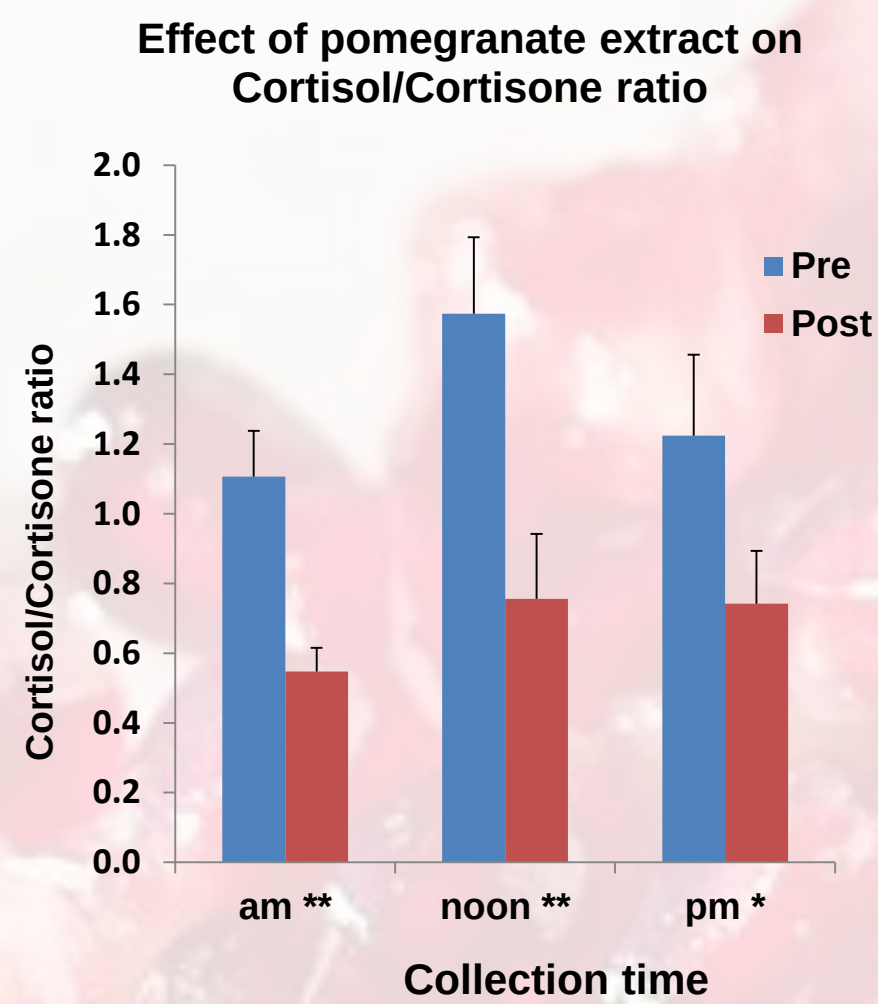
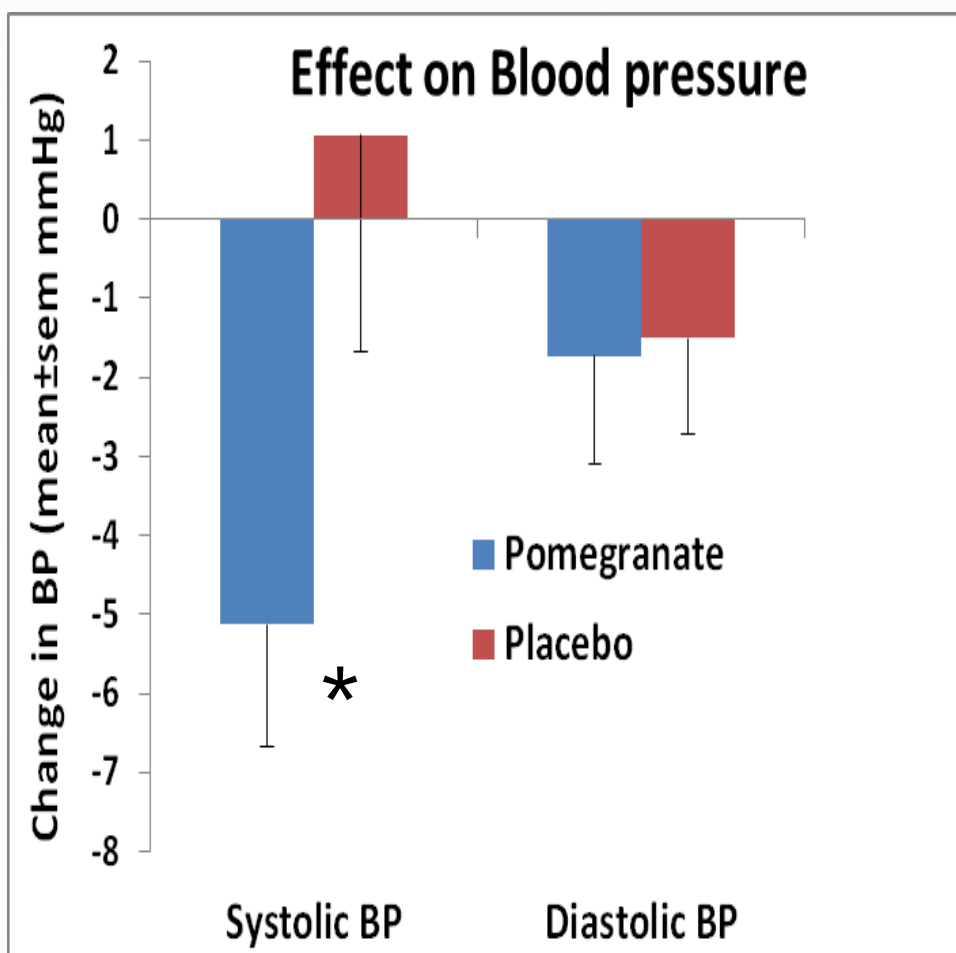
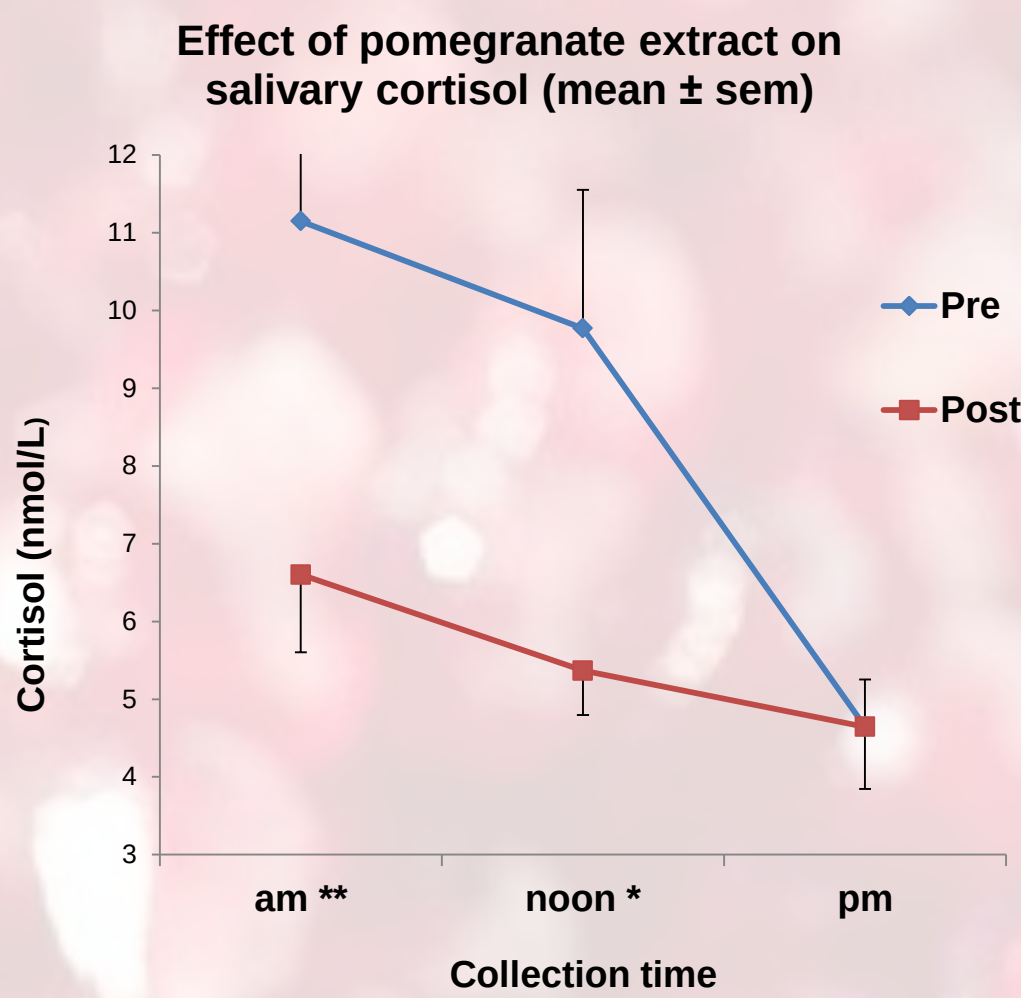
Interest in the potential health benefits of biophenol-rich pomegranate (*Punica granatum* L.) products has increased in recent years. Biophenols can act as powerful antioxidants. Pomegranate provides a rich and varied source of biophenols including ellagitannins, tannins, anthocyanins, ellagic and gallic acids. Recent research shows that pomegranate juice consumption may alleviate cardiovascular risk factors by reducing systolic and diastolic blood pressure. The aim of this study was to investigate the effect of pomegranate extract (PomeGreat Pomanox) supplementation on salivary stress hormones and quality of life in human volunteers.

Methods:

Healthy volunteers (n=29; 7 males and 22 females) enrolled in a randomized, double-blind, placebo-controlled parallel study. Age ranged from 19-62years and BMI from 18.6-32.5kg/m². After randomisation, participants consumed either one pomegranate extract or placebo (looks identical) capsule daily, with water at a meal, for a period of 4 weeks. Each pomegranate extract capsule weighed 1.083g and contained 650mg of pomegranate extract (241 mg punicalagins and 373mg total biophenols. The placebo contained equivalent amount of maltodextrin. Dietary history, BP, habits and the health related Quality of Life Questionnaire (Rand 36) were recorded pre and post intervention. Salivary cortisol and cortisone levels (morning, noon and evening) were sampled and assessed by sensitive ELISA methods. Clinical trial registration: POM-expl: NCT0200593 at clinicaltrials.gov

Results:

Pomegranate extract intake caused a significant decrease of salivary cortisol levels during the day (am: 39.5 $\pm$ 19.6%, p<0.001 and noon: 43.1 $\pm$ 32.3%, p=0.016). Salivary cortisol/cortisone ratio was also significantly reduced (am from 1.11 $\pm$ 0.51 to 0.55 $\pm$ 0.26, p<0.001, noon 1.57 $\pm$ 0.85 to 0.75 $\pm$ 0.72, p<0.001 and pm 1.22 $\pm$ 0.9 to 0.74 $\pm$ 0.59, p=0.011). There was a slight increase in salivary cortisol and cortisol/cortisone ratio in those taking the placebo, but overall not significant. There was an increase in perceived quality of life for participants taking the pomegranate extract. Physical functioning (p=0.018), social functioning (p=0.021), pain (p=0.003), general health (p=0.008) and overall Quality of Life score (p=0.007) were all significantly improved in those taking the pomegranate extract capsules, but not for those taking the placebo.



**p=0.001, *p=0.01, NS= not significant

Conclusion:

These results suggest that pomegranate extract intake rich in biophenols reduces salivary cortisol levels and 11 β HSD1 activity, and improves health related quality of life scores. Pomegranate extract consumption over four weeks may prove to be beneficial for people suffering from chronic stress.

Keywords:

Pomegranate;
Blood pressure;
Quality of life;
Chronic stress;
Cortisol; cortisone
Bio/Polyphenols



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