Abstract:

PURPOSE: Coffee consumption has been reported to decrease oxidative damage in peripheral white blood cells (WBC). However, effects on the level of spontaneous DNA strand breaks, a well-established marker of health risk, have not been specifically reported yet. We analyzed the impact of consuming a dark roast coffee blend on the level of spontaneous DNA strand breaks. METHODS: Healthy men (n = 84) were randomized to consume daily for 4 weeks either 750 ml of fresh coffee brew or 750 ml of water, subsequent to a run in washout phase of 4 weeks. The study coffee was a blend providing high amounts of both caffeoylquinic acids (10.18 +/- 0.33 mg/g) and the roast product N-methylpyridinium (1.10 +/- 0.05 mg/g). Before and after the coffee/water consumption phase, spontaneous strand breaks were determined by comet assay. RESULTS: At baseline, both groups exhibited a similar level of spontaneous DNA strand breaks. In the intervention phase, spontaneous DNA strand breaks slightly increased in the control (water only) group whereas they significantly decreased in the coffee group, leading to a 27% difference within both arms (p = 0.0002). Food frequency questionnaires indicated no differences in the overall diet between groups, and mean body weight during the intervention phases remained
stable. The consumption of the study coffee substantially lowered the level of spontaneous DNA strand breaks in WBC. CONCLUSION: We conclude that regular coffee consumption contributes to DNA integrity.