

A randomised cross-over trial to evaluate the impact of tea on measures of hydration

C. H. S. Ruxton¹ and V. A. Hart²

¹Nutrition Communications, Front Lebanon, Cupar KY15 4EA, UK and ²RSSL, Reading Science Centre, Pepper Lane, Reading RG6 6LA, UK

It is often claimed that caffeinated drinks, such as tea, have an adverse effect on hydration. While studies on caffeine pills have produced inconsistent results⁽¹⁾, those on caffeinated drinks, at caffeine intakes of 114–420 mg, have found no significant impact on hydration^(2,3). However, there have been no randomised controlled trials on tea, as consumed. The present trial aimed to assess the impact of 4 × 240 ml mugs of black, i.e. regular, tea on blood and urine measures of hydration.

Following informed consent, 21 healthy men, who had abstained from caffeine and intense exercise for 10 h, took part in a randomised, cross-over trial. Black tea with semi-skimmed milk was made, using a standardised protocol, and was drunk at fixed, regular intervals over a 10-h period. Water, at an equivalent volume and temperature, was used as a control. Bloods were taken at baseline and on 5 other occasions over 12 h. Changes in individual blood parameters between baseline and 12 h (time 12 minus time 0), for the 16 subjects whose results were available, are shown below:

Change from baseline	K (mmol/l)	Na (mmol/l)	HCO ₃ (mmol/l)	Total protein (g/l)	Urea (mmol/l)	Creatine (mmol/l)	Osmolality (mosmo/kg)
Water	-0.10	+0.60	+0.20	+1.79	+0.69	+1.07	+2.06
Tea	-0.08	+0.55	+0.18	+1.70	+0.96	+1.24	+3.65
<i>P</i> <	NS	NS	NS	NS	NS	NS	NS

Urine was collected over 24 h and analysed. Comparisons in 24 h urine parameters between the water control and tea condition for the same 16 subjects are presented below:

	Volume (l)	Creatinine (µmol/24 hr)	Na (µmol/24 h)	K (µmol/24 h)	Osmolality (mosmo/kg)	Creatinine (mmol/l)	Na (mmol/l)	K (mmol/l)
Water	1.357	15 884	108.3	72.0	634	12 245	87.69	53.74
Tea	1.062	14 180	107.1	60.0	744	14 066	104.5	58.1
<i>P</i> <	NS	NS	NS	NS	NS	NS	NS	NS

No significant differences were found between tea and water for any of the blood or urine parameters. This suggests that tea is equally hydrating to water at an intake of 4 mugs per d, equivalent to a daily caffeine intake of about 200 mg.

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