Effects of drink temperature, capsiate and protein consumption on body temperature, thermal sensation and plasma amino acid concentration during cold exposure in humans

Yuka Okumura, Emi Kondo, Koji Okamura
Osaka University of Health and Sport Sciences

Seven (Trial 1) and 10 (Trial 2) healthy males were exposed to 10°C ambient temperature for 30 min in a sitting position. Thereafter, the subjects ingested 200 mL of one of the following drinks: 10 (W10) and 60°C flavored water (W60), and 10 (C10) and 60°C water with capsiate (C60) in Trial 1; and 60°C flavored water (W60), 60°C flavored water + egg (WP60), 60°C flavored water + capsiate (C60), 60°C flavored water + capsiate + egg (CP60) in Trial 2. In Trial 1, the rectal temperature was higher for 60°C than for 10°C ($p < 0.05$). The sensation of body and ambient temperature after ingestion was significantly higher at 60°C than at 10°C ($p < 0.05$) until 10 min after ingestion. Thereafter the thermal sensation of the ambient temperature was significantly higher ($p < 0.05$) for C60 than for W10 or C10. In Trial 2, the subjects' sensation of the ambient temperature was higher for CP60 than for W60 for the first 10 min after ingestion ($p < 0.05$). These results suggest that both body temperature and thermal sensation are higher after ingesting a hot drink than a cold drink, and capsiate may effectively induce thermal sensations.

Key words　Body temperature,　Cold exposure, Drink