



## Impact of acute resistance exercise on taste perception in young, trained males

L. De Faria<sup>1</sup>, L. Vigo<sup>1</sup>, W. Sala<sup>1</sup> and K. Horner<sup>1</sup>

<sup>1</sup>Institute for Sport and Health and School of Public Health, Physiotherapy and Sport Science, University College Dublin, Belfield, Dublin, Ireland

Plant-based food consumption in wealthy countries is rising due to its sustainability and lower environmental impact<sup>(1,2,3,4)</sup>. Whereas effects on musculoskeletal protein anabolism do not currently seem a shortcoming of plant proteins<sup>(5,6)</sup>, meat-mimicking foods may have lower taste perception scores<sup>(7)</sup>, possibly compromising diet adherence. However, evidence to date regarding acceptability of plant protein powders is limited.

As protein supplements are often consumed post-exercise, it is pertinent to investigate if exercise affects taste perception. Despite some evidence suggesting an altered perception after aerobic exercise<sup>(8)</sup>, resistance exercise (RE) had not been studied to date. Effects of RE on taste perception warrant further investigation, as this may impact acceptability. The present study investigated (1) taste perception of different protein supplements and (2) whether a single bout of RE altered responses.

The study was a randomized crossover trial in which resistance-trained males (n = 14) between ages 18–40 underwent two days of sensory testing in the morning under different conditions: RE or rest. Taste perception was measured pre- and post-intervention. Participants tasted eight samples in standard concentrations, in randomized order. Samples were: whey, soy, pea, rice, hemp, sucrose, umami tastant and apple juice (control). Stimuli were assessed using questionnaires for intensity (0–100 mm gLMS), liking (9-point likert scale; 0–9) and sensory perception visual analogue scales (0–100mm), assessing visual appeal, smell, taste, aftertaste and palatability. The RE bout consisted of volume-matched whole-body RE at 75% 1-RM. Protein samples were compared using one-way ANOVA. Change scores between pre- and post-exercise and rest were compared using paired T-tests or Wilcoxon signed-rank tests where appropriate. Statistical significance was considered at  $p < 0.05$ .

Whey palatability scores showed higher values compared to all plant proteins ( $55.8 \pm 20.7$  vs.  $22.9 \pm 16.5$  mm;  $p < 0.05$ ), yet whey liking was greater only in relation to hemp ( $4.7 \pm 1.6$  vs.  $3.2 \pm 0.9$ ;  $p < 0.05$ ). Intensity increased for all samples as result of RE compared to little change during rest, with the difference being significant for hemp ( $10.1 \pm 7.7$  vs.  $2.2 \pm 10.0$  mm;  $p < 0.01$ ), apple juice ( $8.6 \pm 11.7$  vs.  $0.3 \pm 6.3$  mm;  $p < 0.05$ ) and sucrose ( $14.2 \pm 15.6$  vs.  $-1.8 \pm 9.7$

mm;  $p < 0.01$ ) respectively. Nevertheless, liking of sucrose did not differ between interventions. Significant differences in liking were observed with RE compared to rest for pea ( $-0.1 \pm 0.8$  vs.  $0.8 \pm 1.5$ ;  $p < 0.05$ ), hemp ( $0 \pm 1.3$  vs.  $0.8 \pm 1.1$ ,  $p < 0.05$ ) and umami ( $-0.6 \pm 1.1$  vs.  $0.2 \pm 0.8$ ;  $p < 0.05$ ) when change scores were compared; with a 15% reduction in liking for umami taste with RE.

The present findings show that animal and plant protein powders have differences in taste perception. The findings also show that RE impacts taste perception, with evidence of an increase in taste intensity post-RE, particularly for sweet taste. These data have implications for a better understanding of food choice post-exercise and might be considered in product development.

### References

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