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THE EFFECT OF CHLORELLA PYRENOIDOSA SUPPLEMENTATION ON IMMUNE RESPONSES TO TWO DAYS OF INTENSIFIED TRAINING

Corinna Chidley¹; Glen Davison¹

INTRODUCTION

The aim of this study was to investigate the effects of supplementation with the fresh-water single-celled microalgae *Chlorella Pyrenoidosa* (Chlorella) on sIgA responses to two days of intensified training.

METHODS

Twenty-two trained males and 4 females (age 29.1 ± 8.7 years; $\text{VO}_{2\text{max}}$ 53.7 ± 11.7 ml.kg. min^{-1}) took part in the study. Resting unstimulated saliva samples were collected at baseline (week-0) and following 4, 5, and 6 weeks (weeks-4, -5, -6) of daily supplementation with either placebo (PLA) or Chlorella (SunChloralla A tablets, 30/day: equivalent to 6 g/day of Chlorella). During week-4 subjects undertook a 2-day intensified training period (2 sessions per day on a cycle ergometer: day 1 morning, $\text{VO}_{2\text{max}}$ test; afternoon: high-intensity interval training (HIT) consisting of 3 x 30 sec Wingate sprints with 90 sec recovery intervals; day 2 morning, 90 minutes at $25\% \Delta (\sim 60\% \text{VO}_{2\text{max}})$, afternoon; 3 x 30 sec HIT). Saliva samples were also collected pre-, post- and 1 h post exercise bouts for determination of secretory IgA (sIgA) by ELISA.

RESULTS

Only significant main effects are reported here (for 2-way mixed ANOVA only interactions are reported). All other comparisons/analyses were non-significant ($P > 0.05$).

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Resting slgA

For slgA concentration a significant trial $\times$ time interaction was seen ($P = 0.024$) with (slgA) tending to increase with Chlorella by week-5 and week-6 (*post hoc* $P = 0.078$ and 0.056 , respectively) but remaining unchanged in PLA (PLA vs Chlorella: week-0, 205 ± 106 vs 192 ± 80 ; week-4 = 176 ± 90 vs 199 ± 86 ; week-5 = 185 ± 103 vs 260 ± 112 ; week-6 = 192 ± 57 vs 368 ± 261). For slgA secretion rate a significant trial $\times$ time interaction was seen ($P = 0.016$) due to an increase with Chlorella at week-4, week-5 and week-6 ($P = 0.020$, < 0.001 , and 0.016) whilst it remained unchanged in PLA (PLA vs Chlorella: week-0 = 54 ± 33 vs 57 ± 37 ; week-4 = 54 ± 35 vs 83 ± 57 ; week-5 = 63 ± 46 vs 98 ± 47 ; week-6 = 58 ± 35 vs 85 ± 59).

Responses to exercise

For slgA secretion rate there was a significant trial $\times$ time interaction for exercise bouts 2 ($P = 0.016$) and 3 ($P = 0.017$). For bout 2 there was no change in PLA ($P = 0.075$) but a significant increase with Chlorella at pre-exercise (i.e. week-0 = 57 ± 37 vs pre-exercise = 100 ± 82 , $P = 0.009$) and post-exercise (93 ± 97 , $P = 0.010$). For exercise bout 3 there was no change in PLA ($P = 0.996$) but a significant increase with Chlorella at pre-exercise (88 ± 50 , $P = 0.023$), post-exercise (77 ± 41 , $P = 0.005$) and 1h post-exercise (87 ± 43 , $P = 0.004$).

CONCLUSION

Supplementation with 6 g/day Chlorella for 4 weeks has beneficial effects on resting slgA, which might be beneficial during periods of intensified training. However, the present findings suggest it is possible that a longer pre-training supplementation period (e.g. 6-8 weeks supplementation) is required for optimal benefit.