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NO EFFECT OF ACUTE OR CHRONIC BOVINE COLOSTRUM SUPPLEMENTATION ON CIRCULATING INSULIN-LIKE GROWTH FACTOR-I

Arwel W Jones¹; Glen Davison²

INTRODUCTION

The World Anti-Doping Agency does not recommend the consumption of bovine colostrum (COL) as it contains prohibited substances (e.g. insulin-like growth factor-I, IGF-I) that may influence the outcome of anti-doping tests. Our aim was to perform post-hoc analysis of samples collected in three prospective, placebo-controlled randomised trials of COL supplementation and immune health from our laboratory.

METHODS

IGF-I concentration was quantified in duplicate pre-treated (to release IGF-I from binding proteins) plasma samples via an enzyme-linked immunosorbent assay. Eighty nine healthy, recreationally active males were included from published (Study 1: Jones et al., 2014, Study 2: Jones et al., 2015) and yet to be published investigations of COL supplementation. We also determined IGF-I concentrations in COL and placebo (PLA) (isoenergetic/isomacronutrient mixture of skimmed milk powder and milk protein concentrate) supplements and commercially available milk products.

RESULTS

COL supplement (70 ng/ml) contained an approximate eight-fold greater level of IGF-I than PLA (8 ng/ml), whole milk (9 ng/ml), semi-skimmed milk (9 ng/ml) and skimmed milk

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(9 ng/ml). In study 1, compared to placebo (n = 28, baseline: 107 ± 38 ng/ml, 12 weeks: 104 ± 37 ng/ml), 12 weeks of COL (20 g per day) supplementation (n = 25, baseline: 96 ± 26 ng/ml, 12 weeks: 93 ± 24 ng/ml) did not lead to changes in circulating IGF-I (two-factor mixed ANOVA, group: p = 0.400, group x time interaction: p = 0.498, time p = 0.602). In study 2, there were no differences in circulating IGF-I between PLA (n = 10, baseline: 109 ± 27 ng/ml, 4 weeks: 119 ± 35 ng/ml) and COL (n = 10, baseline: 107 ± 21 ng/ml, 4 weeks: 106 ± 21 ng/ml) groups following 4 weeks of (20 g per day) supplementation (two-way mixed ANOVA, group: p = 0.584, group x time interaction: p = 0.083, time p = 0.243). In study 3, two-factor repeated measures ANOVA (group: p = 0.133, group x time interaction: p = 0.166, time p = 0.013) revealed a change over time but not any significant differences in IGF-1 between a total acute dose of 40 g of COL (n = 16, baseline: 130 ± 36 ng/ml, 1 hour: 132 ± 34 ng/ml, 5 hours: 126 ± 32 ng/ml) or PLA (n = 16, baseline: 133 ± 39 ng/ml, 1 hour: 141 ± 39 ng/ml, 5 hours: 133 ± 39 ng/ml).

CONCLUSION

Despite greater concentration of IGF-I in COL products compared to energy matched PLA supplements and commercially available milk products, these findings provide further evidence that acute and chronic COL consumption do not change circulating levels of IGF-1.

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