

Abstract

The effect of bovine colostrum supplementation on swimming performance in trained athletes

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Bovine colostrum (BOV-COL) is a promising natural product applied to evoke ergogenic potential in athletes experiencing high and prolonged training loads, especially in disciplines where the immune system is particularly exposed to exercise-induced

disturbances. Regular ingestion of BOV-COL may contribute to a decreased risk of upper respiratory tract infections and eventually result in improved physical performance and exercise adaptations. Nineteen trained male triathletes ($n=16$) and swimmers ($n=3$) aged 34.8 ± 10.0 years (body mass 78.6 ± 6.4 kg) completed this double-blind placebo (PLA)-controlled cross-over study aimed at investigating the effect of BOV-COL supplementation on discipline-specific performance (DSP) and heart rate (HR). Study participants were supplemented with 25 g per day of BOV-COL and PLA (high-quality milk protein supplement) in a randomly assigned cross-over manner for 12 weeks with 4 weeks of wash-out period between treatments. The study protocol assumed 4 study visits – before (BOV-COL_{PRE}/PLA_{PRE}) and after (BOV-COL_{POST}/PLA_{POST}) supplementation with BOV-COL and PLA. DSP was evaluated based on the specific ramp test comprising eight 100-m long swimming distances (of which the distances D_{I-III} were performed at a level of 75% maximal effort [ME], D_{IV-V} at 85% ME, D_{VI} at 90% ME, D_{VII} at 95% ME and D_{VIII} at 100% ME). During the DSP test, HR was continuously monitored using Garmin Fenix 5x and HRM-Swim™ Chest Strap (Garmin, USA). The results of mean HR (HR_{I-VIII}) and maximal HR (HR_{max_I-VIII}) within each distance, mean HR of the last 30 s of each distance (HR_{30_I-VIII}) and mean HR of the whole DSP test (HR_{DSP}) were recorded. Test-*T* for dependent variables was applied. The time of D_{IV} was significantly higher at PLA_{POST} vs. PLA_{PRE}. No BOV-COL_{PRE} vs. BOV-COL_{POST} differences were noted in this regard. However, BOV-COL ingestion resulted in significantly lower HR_{I-VI}, HR_{DSP}, HR_{30_I, III, IV, VI} and mean HR₃₀; HR_{max_I, VI} at POST vs. PRE evaluation. PLA ingestion resulted in significantly lower HR_{I, II, IV-VIII}, HR_{DSP}, HR_{30_I, III-VI, VIII} and mean HR₃₀; HR_{max_I, II, IV, VI, VII} at POST vs. PRE evaluation. The magnitude of the described changes between BOV-COL vs. PLA needs to be analysed further. As a result of the ingestion of both BOV-COL and PLA, athletes were able to perform the DSP test at a comparable rate to PRE supplementation; however, they experienced lower HR during the test. BOV-PLA and high-quality milk protein supplement (PLA) seem to be equally effective in improving DSP and physiological adaptation to intense exercise.

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