

# EFFECTS OF WHITE OR RED GRAPE JUICE CONSUMPTION ON FATIGUE, MUSCLE DAMAGE, AND INFLAMMATION IN RUGBY ATHLETES: A RANDOMIZED CONTROLLED TRIAL

Amanda Stolzenberg Blembeel<sup>1,2</sup>, Daniela Pochmann<sup>2</sup>, Eduardo Macedo Duarte<sup>1</sup>,  
Thiago Rozales Ramis<sup>4</sup>, Ana Lúcia Hoefel<sup>5</sup>, Caroline Dani<sup>1,2\*</sup>

<sup>1</sup> Laboratório de Bioquímica, Centro Universitário Metodista IPA, Rio Porto Alegre, Grande do Sul, Brazil.

<sup>2</sup> Programa de Pós-Graduação em Ciências Biológicas: Farmacologia e Terapêutica, Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil.

<sup>3</sup> Bacharel em Fisioterapia, Centro Universitário Metodista IPA, Porto Alegre, Rio Grande do Sul, Brazil.

<sup>4</sup> Doutor em Ciências do Movimento Humano, Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil.

<sup>5</sup> Docente Centro Universitário da Serra Gaúcha, Caxias do Sul, Rio Grande do Sul, Brazil.

Rugby is a sport that demands strength and power. It involves high-intensity exercise, causing muscle fatigue, muscle damage, and inflammation. Grape juice is an antioxidant food, which can contribute to reducing this damage. The juices can be white or red, with the main difference being the amount of polyphenols, the first being poorer in this compound. To evaluate the effect of grape juice consumption on muscle fatigue, markers of muscle damage and inflammation in Rugby players. This is a randomized, blinded clinical study. Data were collected from 19 male athletes. The variables collected included the evaluation of the muscle thickness of the upper limb brachii biceps (right and left) and handgrip strength; parameters of biochemical markers for muscle damage (CK-NAC, CK-MB, LDH, TGO) and dosage of the inflammatory cytokine IL-6. We found a statistically significant reduction in total creatine kinase and MB creatine kinase fraction related to muscle fatigue at the post-departure time in the white and red grape juice groups,  $p < 0.05$ . There was a significant reduction in lactate dehydrogenase levels as an indicator of protection against muscle fatigue, however, only in the white grape juice group ( $p < 0.05$ ). Also, in this white juice group, muscle thickness increased significantly, evaluated by ultrasonography,  $p < 0.05$ . **Conclusions:** Consumption of grape juice reduced markers of muscle fatigue in rugby athletes, and white grape juice showed a greater effect on the control of creatine kinase elevation, lactate dehydrogenase and muscle thickness in the post-match period. **Brazilian Clinical Trials Registry: RBR-5mv7jd**

**Keywords:** sport; rugby; Polyphenolic; inflammatory