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1 Soluble milk proteins promote the recovery of muscle functional 2 properties after an immobilization

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11 12 INTRODUCTION

13 It has been shown that soluble milk proteins are more efficient in the recovery of muscle mass
14 after a period of immobilization. However, their effect on muscle functional properties
15 remains unknown.

16 OBJECTIVE

17 To evaluate the effect of milk proteins quality on the recovery of muscle functional properties
18 after an immobilization.

19 METHODS

20 After an initial (I0) evaluation of the contractile properties of the plantar flexors (isometric
21 torque and concentric power), the ankle of 30 adult rats was immobilized by casting for 8 days.
22 After cast removal, rats were fed either with a diet with 13% of casein (CAS); or 13% of native
23 soluble milk proteins (NAT); or 13% of proteins from whey (WHEY). During the recovery period,
24 contractile properties were evaluated 7 (R7), 21 (R21) and 42 days (R42) after cast removal.

25 RESULTS

26 The immobilization induced an homogeneous depression of isometric torque and concentric
27 power in all the experimental groups. At R21, isometric torque had fully recovered in WHEY
28 and NAT, but was still significantly depressed in CAS, where complete recovery occurred at
29 R42. No significant difference of power recovery kinetics was observed between CAS, WHEY
30 and NAT at R21. However, power was increased in NAT at R42 as compared to I0 (+ 14.7 ±
31 26.0% ; P<0.001), but not in CAS and WHEY.

32 DISCUSSION/CONCLUSION

33 Soluble milk proteins clearly speed up the recovery of isometric torque as compared to casein.
34 However, in dynamic condition, the increase of concentric power above baseline values is only
35 observed in the group fed with native soluble milk proteins.