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Editorial Open Access

Single Dose of Intra-Muscular Platelet Rich Plasma as Therapeutic and Preventive Modalities in Exercise-Induced Muscle Damage

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Editorial

According to published work, platelet-rich plasma (PRP), an autologous derivative of whole blood containing a supraphysiological concentration of platelets, has gained increasing attention in both the scientific literature and the wider media for its potential application in the treatment of traumatic musculoskeletal injury and sports-related injuries. Related the our study results showed that acute exhaustive exercise increased muscle damage markers as a creatinine kinase (CK), lactate dehydrogenase (LDH), aspartate aminotransferase (AST), and alanine aminotransferase (ALT), including plasma iron, iron binding capacity (IBC), ferritin, hepcidin levels, indicating muscle damage induced by exercise. However, PRP administration suppressed the increase the level of the iron, hepcidin and ferritin level due to muscle damage 2-3 days post-exercise. Evidently, we found that muscle strength peak torque values were improved after PRP compared to the control arm and this occurred on the same days (second and third day) when the serum iron and hepcidin level declined post exercise-induced muscle damage. This result considered that PRP may be improved the muscle damage quickly. As an alternative to conventional treatments, platelet-rich therapy has been applied due to its potential in protecting iron stores and it may play a protective role exercise-induced anemia. However, it remains to be defined the effect of the intramuscular injection PRP on iron related parameters and hepcidin mechanism. In addition we found that 24 h following exercise increased levels of plasma insulin-like growth factor (IGF-1), growth hormone (GH) and insulin-like growth factor-binding protein 3 (IGFBP-3) in control were observed. PRP up-regulated platelet-derived growth factor (PDGF-BB) and vascular endothelial growth factor (VEGF), it also inhibited GH, IGF-1 and IGFBP-3 levels post-exercise. Our studies results indicated that PRP administration improved the inflammatory response by reversing the observed increase in iron level and suppressed the hepcidin level and it may have a role to play in the recovery of exercise-induced muscle damage. Also, it may help the protective role exercise induced iron losses. Evidently, intramuscular PRP injection had no effect on CK levels, indicating that it is not myotoxic. Additionally, PRP administration can alter growth factors which are induced during exercise muscle damage. Hence, PRP accelerates the recovery and regeneration of damaged muscles.

References

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