Publication

Pharmacological targeting of exercise adaptations in skeletal muscle: Benefits and pitfalls

Exercise exerts significant effects on the prevention and treatment of many diseases. However, even though some of the key regulators of training adaptation in skeletal muscle have been identified, this biological program is still poorly understood. Accordingly, exercise-based pharmacological interventions for many muscle wasting diseases and also for pathologies that are triggered by a sedentary lifestyle remain scarce. The most efficacious compounds that induce muscle hypertrophy or endurance are hampered by severe side effects and are classified as doping. In contrast, dietary supplements with a higher safety margin exert milder outcomes. In recent years, the design of pharmacological agents that activate the training program, so-called "exercise mimetics", has been proposed, although the feasibility of such an approach is highly debated. In this review, the most recent insights into key regulatory factors and therapeutic approaches aimed at leveraging exercise adaptations are discussed.