

## Letter to editor

# An important issue that has to be addressed: Irisin crosstalk with cancerous tissues

Saleh Rahmati-Ahmadabad<sup>1\*</sup>

## Dear Editor-in-Chief

Many studies have shown that regular physical activity has a significant effect on improving a range of disorders such as metabolic syndrome, cardiovascular disease, and cancer. Regular physical activity improves disease activity in patients by affecting hormones, the reverse cholesterol transport process, factors related to antioxidants and immune defense systems, factors that control cell apoptosis, and more (Myers, Kokkinos, & Nyelin, 2019).

Nowadays, the role of muscle-secreting cytokines (in response to physical activity) in fighting diseases has attracted the attention of scientists. Muscle-secreting cytokines (myokines) provide communication between muscle and other tissues and organs such as the brain, adipose tissue, bone, liver, intestines, pancreas, etc., and physical activity is a way to stimulate the secretion of these myokines from the muscle. Myokines are involved in critical processes of the body such as cognition, lipid, and glucose metabolism, browning of white fat, bone formation, endothelial cell function, hypertrophy, skin structure, and tumor growth (Severinsen & Pedersen, 2020); therefore, they can be studied as a mechanism for the effect of physical activity on various diseases.

Irisin is a myokine. It is secreted from skeletal muscle in response to physical activity. Physical activity increases the transcriptional activator of PGC1- $\alpha$  and induces the expression of the FNDC5 gene, and subsequently, irisin is released into the blood. Irisin facilitates glucose uptake by skeletal muscle, improves glucose and liver fat metabolism, has a positive effect on hyperlipidemia and hyperglycemia due to obesity and metabolic syndrome, and acts as an insulin-sensitizing hormone (Severinsen & Pedersen, 2020).

The role of irisin in cancer treatment is unclear, and further studies are

needed. The results of a review study show that regular physical activity increases irisin, but the use of irisin in cancer therapeutics requires further researches (Maalouf & El Khoury, 2019). More studies should be performed to determine the mode of administration of irisin for each cancer type and investigate the amount of use. Moreover, studies on the impact of physical activity on irisin in cancer patients are required.

## References

- Maalouf, G. E., & El Khoury, D. (2019). Exercise-induced irisin, the fat browning myokine, as a potential anticancer agent. *Journal of Obesity*, 2019, 6561726. doi: <https://doi.org/10.1155/2019/6561726>
- Myers, J., Kokkinos, P., & Nyelin, E. (2019). Physical activity, cardiorespiratory fitness, and the metabolic syndrome. *Nutrients*, 11(7), 1652. doi: <https://doi.org/10.3390/nu11071652>
- Severinsen, M. C. K., & Pedersen, B. K. (2020). Muscle-organ crosstalk: The emerging roles of myokines. *Endocrine Reviews*, 41(4), 594-609. doi: <https://doi.org/10.1210/endrev/bnaa016>

1. Department of Physical Education, Pardis Branch, Islamic Azad University, Pardis, Iran.

\*Author for correspondence: [salehrahmati@pardisiau.ac.ir](mailto:salehrahmati@pardisiau.ac.ir)

Post Office Box: 1658174583

Tel: +98-21- 76281010-11, Fax: +98-21- 76281010

 S R A: 0000-0001-8751-1759