



## OPEN ACCESS

EDITED AND REVIEWED BY  
Filippo Drago,  
University of Catania, Italy

\*CORRESPONDENCE  
Esra Küpeli Akkol,  
✉ esrak@gazi.edu.tr

SPECIALTY SECTION  
This article was submitted  
to Experimental Pharmacology  
and Drug Discovery,  
a section of the journal  
Frontiers in Pharmacology

RECEIVED 25 November 2022  
ACCEPTED 07 December 2022  
PUBLISHED 16 January 2023

CITATION  
Deliorman Orhan D, Küpeli Akkol E and  
Khan H (2023), Editorial: Needs and  
challenges associated with the  
therapeutic use of novel natural  
products in weight control and  
diabetes management.  
*Front. Pharmacol.* 13:1107928.  
doi: 10.3389/fphar.2022.1107928

COPYRIGHT  
© 2023 Deliorman Orhan, Küpeli Akkol  
and Khan. This is an open-access article  
distributed under the terms of the  
[Creative Commons Attribution License  
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or  
reproduction in other forums is  
permitted, provided the original  
author(s) and the copyright owner(s) are  
credited and that the original  
publication in this journal is cited, in  
accordance with accepted academic  
practice. No use, distribution or  
reproduction is permitted which does  
not comply with these terms.

# Editorial: Needs and challenges associated with the therapeutic use of novel natural products in weight control and diabetes management

Didem Deliorman Orhan<sup>1</sup>, Esra Küpeli Akkol<sup>1\*</sup> and Haroon Khan<sup>2</sup>

<sup>1</sup>Department of Pharmacognosy, Faculty of Pharmacy, Gazi University, Ankara, Turkey, <sup>2</sup>Abdul Wali Khan University, Mardan, Pakistan

## KEYWORDS

diabetes, obesity, molecular docking, natural compound, weight control

## Editorial on the Research Topic

[Needs and challenges associated with the therapeutic use of novel natural products in weight control and diabetes management](#)

We are honored to publish the Research Topic “*Needs and Challenges Associated with the Therapeutic Use of Novel Natural Products in Weight Control and Diabetes Management*” as guest editors. This thematic title aims to evaluate *in vitro* and *in vivo* studies, structure-activity relationships, and new therapeutic targets on isolated natural compounds for use in diabetes management and weight control. Four review/research articles of the scientific publications sent per the thematic title were deemed suitable for publication.

Jiang et al. summarize the potential therapeutic effects of artemisinin and its derivatives in Type 2 Diabetes Mellitus (T2DM), its mechanism, and associated complications, and provided a scientific reference for further detailed studies on this Research Topic in the future. Bai et al. investigate the effects and possible mechanisms of gastrodin, the main component of a traditional Chinese herbal medicine called *Gastrodia elata* Blume, in the treatment of T2DM. The results of the study showed that gastrodin promotes the phosphorylation of GATA1 via the PI3K/AKT pathway, increases the transcriptional activity of GATA1, and subsequently increases the expression level of USP4, thereby reducing the ubiquitination and degradation of insulin receptors, and ultimately improving insulin resistance. Yang et al. discuss the types and functions of histone methylation and its role in T2DM treatment. In addition, the role of histone methyltransferases and histone demethylases in the

progression of T2DM is reviewed and potential applications of histone methylation modification as a treatment target are evaluated. Pekacar and Deliorman Orhan evaluate the *in vitro* antidiabetic, antiobesity, antioxidant, and antihyperlipidemic effect potential of *Pistacia atlantica* Desf. leaves with an activity-guided fractionation study. The presence of trigalloylglucose, digalloylglucose, methyl gallate, methyl digallate, 2''-O-galloyl-quercetin-3-O-hexoside, and myricetin-3-O-hexoside was determined by LC-QTOF-MS analysis in the sub-fractions that had the highest inhibitory effect on  $\alpha$ -amylase and  $\alpha$ -glucosidase enzymes among the sub-fractions obtained from the ethyl acetate extract of the leaves. In these published scientific articles, natural compounds that can be used in the treatment of T2DM, their mechanism of action, the effects of epigenetic modifications in T2DM, and potential applications of histone methylation modification as a treatment target are examined. Thank you to all the authors who contributed to this Research Topic of Frontiers in Pharmacology and we hope that it will be useful to its readers.

## Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.