

Proceedings

# Influence of Organic and Conventional Agricultural Practices on Chemical Profile, In Vitro Antioxidant and Anti-Obesity Properties of *Zingiber officinale* Roscoe †

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**Abstract:** *Zingiber officinale* Roscoe (Zingiberaceae), common known as ginger, is extensively used as spice worldwide in cooking and to prepare beverage. Moreover, it was used to treat a wide range of diseases including metabolic syndrome (MetS). MetS is a group of risk factors, including insulin resistance and consequently impaired glucose tolerance, dyslipidaemia, obesity, and hypertension. It is estimated that that MetS affects 25% of the population [1]. The efficacy of natural products especially derived from vegetables and spice largely consumed worldwide is a topic of great interest not only to cure but also to prevent the onset of the disease. In this study the influence of organic (OR) and conventional (CONV) agricultural practices on chemical profile and nutraceutical properties of *Zingiber officinale* Roscoe spice was evaluated. A multi-target approach was used to test the antioxidant activity by using DPPH, ABTS,  $\beta$ -carotene bleaching, and FRAP assays. The anti-obesity effect was investigated through inhibition of lipase and carbohydrate hydrolyzing enzymes  $\alpha$ -amylase and  $\alpha$ -glucosidase [2]. Ginger bioactive compounds were extracted by ultrasound assisted maceration process with ethanol. OR Ginger (Z5) showed the highest TPC and TFC with values of 39.27 and 15.38 mg/g DW. This sample resulted the most active in all applied antioxidant test with particular reference to ABTS test where Z5 showed a stronger activity with IC<sub>50</sub> value of 0.81  $\mu$ g/mL in comparison to the positive control ascorbic acid (1.70  $\mu$ g/mL). RACI and GAS statistical approach confirmed the Z5 highest antioxidant potency. Moreover, Z5 exhibited a promising lipase inhibitory activity with IC<sub>50</sub> value quite similar to the positive control orlistat (IC<sub>50</sub> values of 34.48 vs. 37.42  $\mu$ g/mL). Collectively, our results demonstrated the impact of agricultural practices on ginger health properties. However, further *in vivo* studies will be needed to confirm the potential in humans and prove the safety of the products.

## References

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