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Revisiting thermogenic compounds with prebiotic potential; Exploiting the Gut-BAT axis

The gut microflora is a combination of all microbes that live in the digestive tracts of animals including humans. The influence of these gut microbes on the physiology and metabolism of the body is profound. It is notable that minor variations within the body and changes in external environment can largely affect the gut microbiome which can in turn affect our physical, emotional and mental well-being. Prebiotics are compounds that can promote the growth of the beneficial gut microbes. They may include indigestible carbohydrates such as inulin, oligofructoses and fibres, among others. Among the vast majority of compounds that are explored for their prebiotic potential, the spices are a popular choice.

The process of Non-shivering Thermogenesis (NST) in Brown Adipose Tissue (BAT) has attracted attention due to its application in managing obesity. Thermogenic potential of spices in activating NST in BAT is well established. Beyond the sympathetic tone, newer molecules are now known to activate BAT. The GUT-BAT axis is currently being explored to identify if variation in the gut microbiota can alter the thermogenic potential of BAT or modify the overall thermogenic response of the body. In the present study, we summarize the current understanding of the effect of gut microbes on BAT activity and the role of thermogenic compounds in increasing the number of beneficial gut microbes.

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