

## **The role of estrogen across multiple disease mechanisms**

### **ABSTRACT**

Estrogen is a significant hormone that is involved in a multitude of physiological and pathological processes. In addition to its pivotal role in the reproductive system, estrogen is also implicated in the pathogenesis of a multitude of diseases. Nevertheless, previous research on the role of estrogen in a multitude of diseases, including Alzheimer's disease, depression, cardiovascular disease, diabetes, osteoporosis, gastrointestinal diseases, and estrogen-dependent cancers, has concentrated on a single disease area, resulting in a lack of comprehensive understanding of cross-disease mechanisms. This has brought some challenges to the current treatment methods for these diseases, because estrogen as a potential therapeutic tool has not yet fully developed its potential. Therefore, this review aims to comprehensively explore the mechanism of estrogen in these seven types of diseases. The objective of this study is to describe the relationship between each disease and estrogen, including the ways in which estrogen participates in regulating disease mechanisms, and to outline the efficacy of estrogen in treating these diseases in clinical practice. By studying the role of estrogen in a variety of disease mechanisms, it is hoped that a more accurate theoretical basis and clinical guidance for future treatment strategies will be provided, thus promoting the effective management and treatment of these diseases.