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Sources, biosynthesis pathways, bioavailability, bioactivity, and pharmacology of dihydrodaidzein

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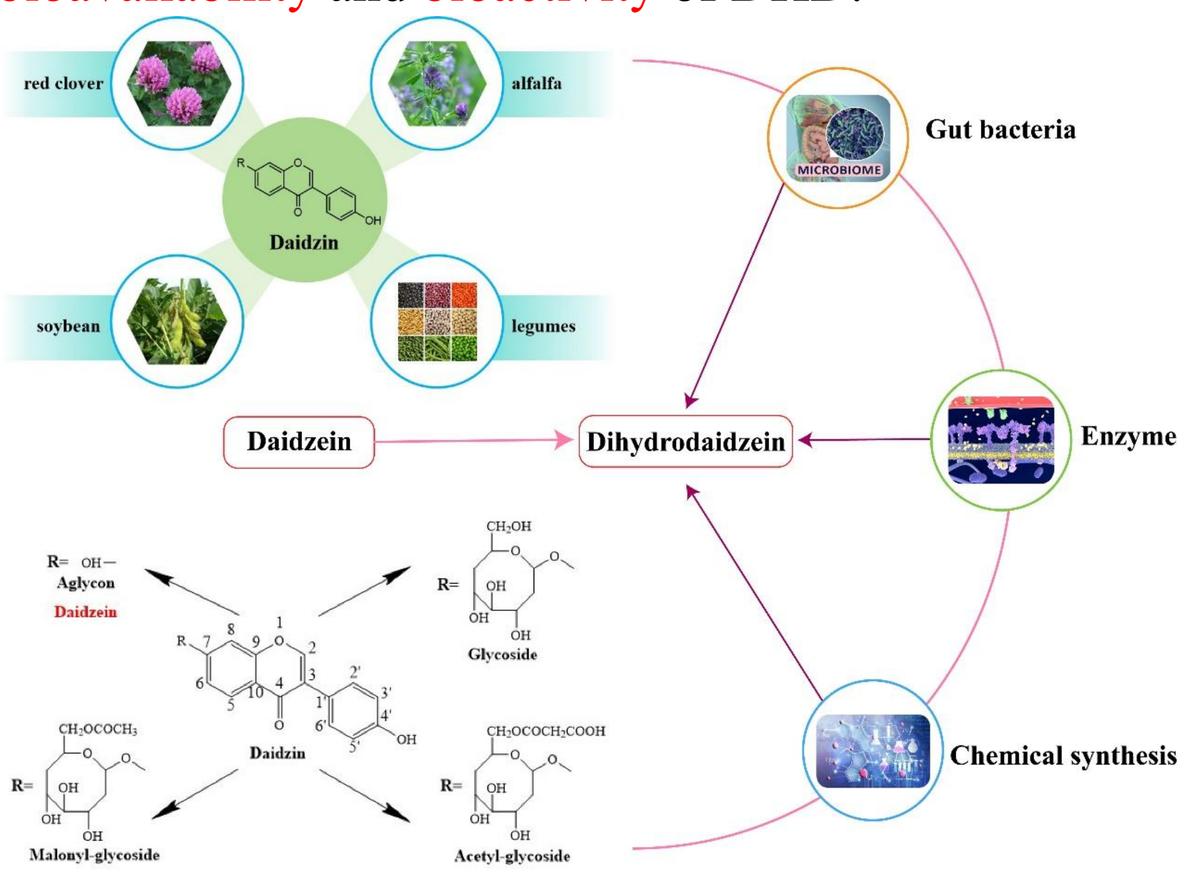
INTRODUCTION & AIM

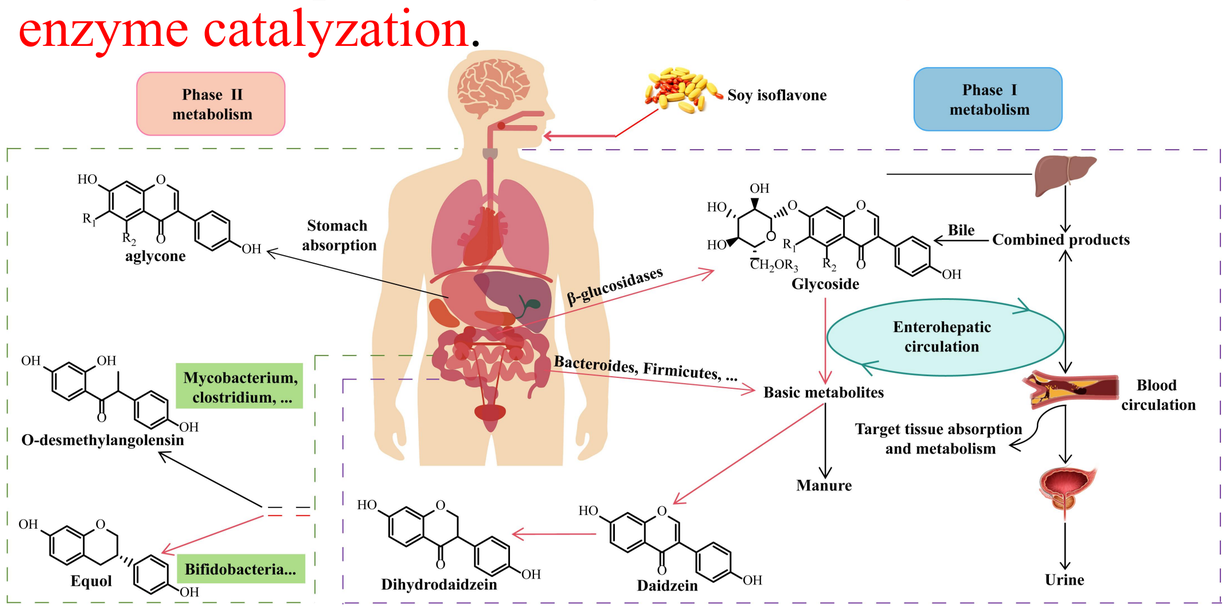
Dihydrodaidzein (DHD) is an isoflavone compound, primarily derived from the principal constituents of soy isoflavones (SIF)—daidzein (DAI), through hydrogenation in metabolism.

This review provides a systematic overview of the resources, physicochemical properties, in vivo metabolism and microbial transformation, bioavailability and bioactivity of DHD.



Biosynthesis pathway and biotransformation

DHD is mainly derived from biosynthesis, and it can also be produced by chemical synthesis and enzyme catalyzation.

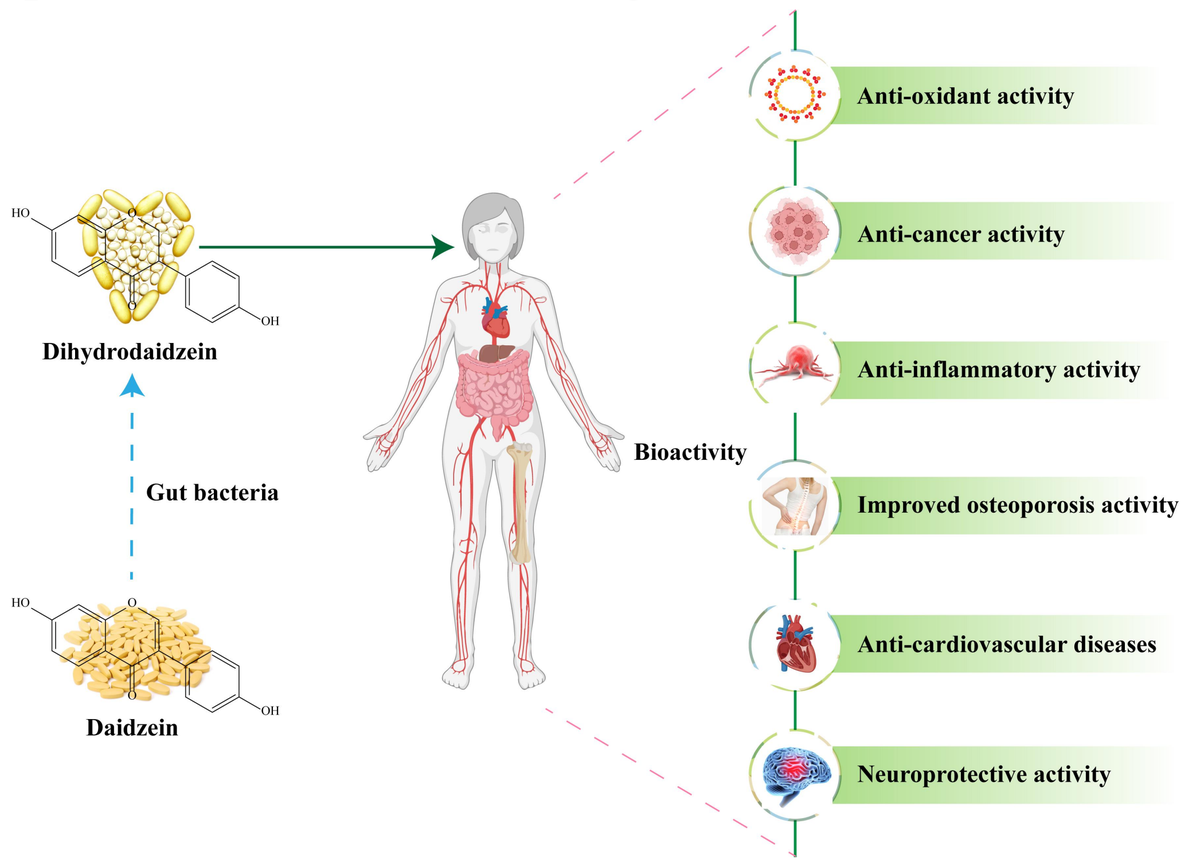


Intestinal bacteria plays a pivotal role in the biotransformation of DAI, and the enrichment and substantial synthesis of DHD depend on the selection of highly efficient bacterial strains from the multitude participating in DAI conversion.

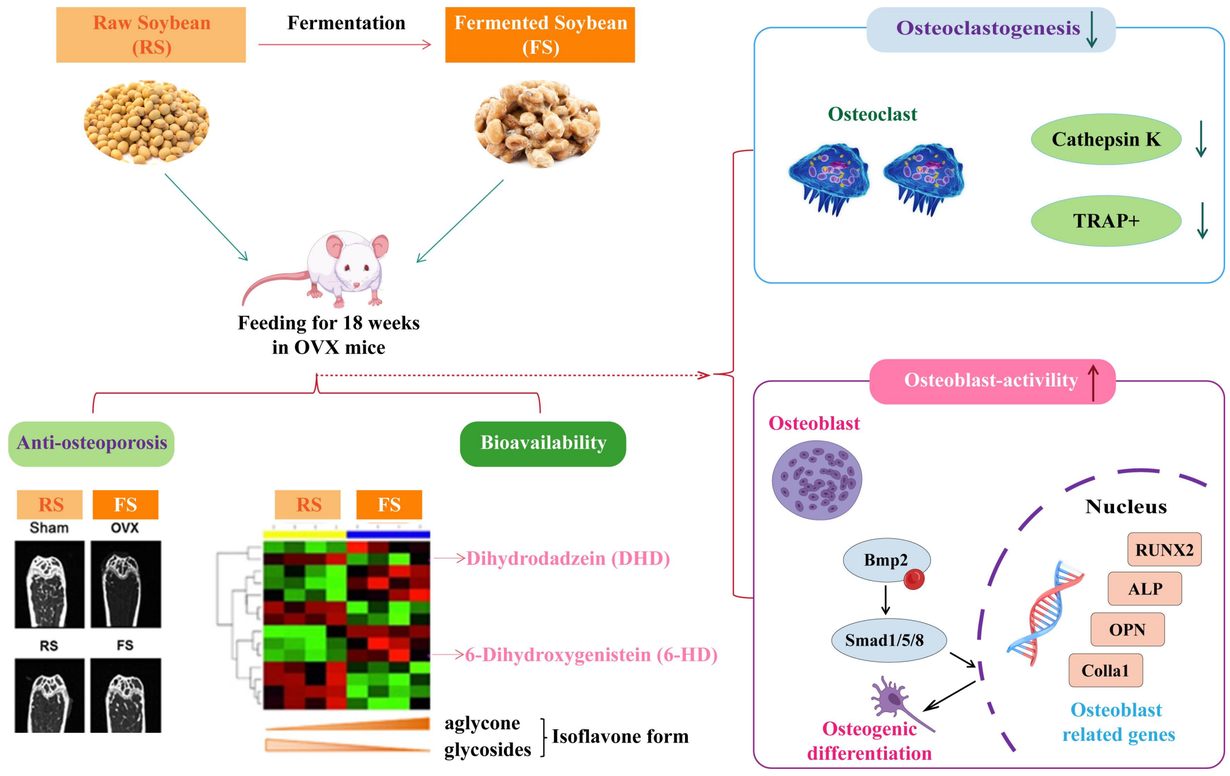
This procedure is primarily achieved through the secretion of a series of enzymes, with different enzymes required at different stages.

Bioactivity and pharmacological applications

The DHD is widely considered as one of the most active forms of SIF, and extensive experimental data supports its efficacy in anti-oxidant, cardiovascular disease prevention, osteoporosis prevention, and other biological activities.



Abundant research indicates that DHD exhibits higher and broader biological activity compared to its metabolic precursor DAI, such as improved osteoporosis activity.



Conclusion and future perspectives

The efficient biological activity of DHD has aroused a research fervor among scientists, and it is a future research trend to explore and develop efficient and rapid methods for large-scale preparation of DHD and to explore more potential biological functions of DHD within the body.