Technology Offer CSIC/RR/008

Method for producing matairesinol from lignans using enzymes

Combination of enzymes that carries out the conversion of secoisolariciresinol diglucoside (SDG) to matairesinol with high yield. It enables the production of food compositions of great interest since matairesinol exhibits health-beneficial activities.

Intellectual Property

Priority patent application filed

Stage of development

Technology ready for test in an industrial environment

Intended Collaboration

Licensing and/or co-development

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Market need

Secoisolariciresinol diglucoside and matairesinol are lignans found in a variety of foods such as oilseeds, whole grains, vegetables, and fruits.

These lignans are of interest in the food sector due to their health benefits, such as their potential anticancer, antiproliferative, and antioxidant effects, which are associated with the prevention of cardiometabolic, neurodegenerative, and cancerous diseases.

Proposed solution

This combination of enzymes includes a glucosidase, a secoisolariciresinol dehydrogenase, and a glucose dehydrogenase, which are capable of carrying out the reactions leading to the conversion of secoisolariciresinol diglucoside (SDG) into matairesinol.

Although the secoisolariciresinol dehydrogenase enzyme alone is capable of catalyzing the conversion of secoisolariciresinol into matairesinol, it requires reducing power to carry out the reaction. This reducing power is provided by the glucose dehydrogenase enzyme, thereby increasing the reaction yield.

Competitive advantages

- The enzyme combination results in a transformation of SDG to matairesinol with yields greater than 70%.
- This combination does not require the use of chemical compounds to produce matairesinol, which also enables its safe use in food products.