Hydroalcoholic extract from chestnut shell for use as an antibacterial

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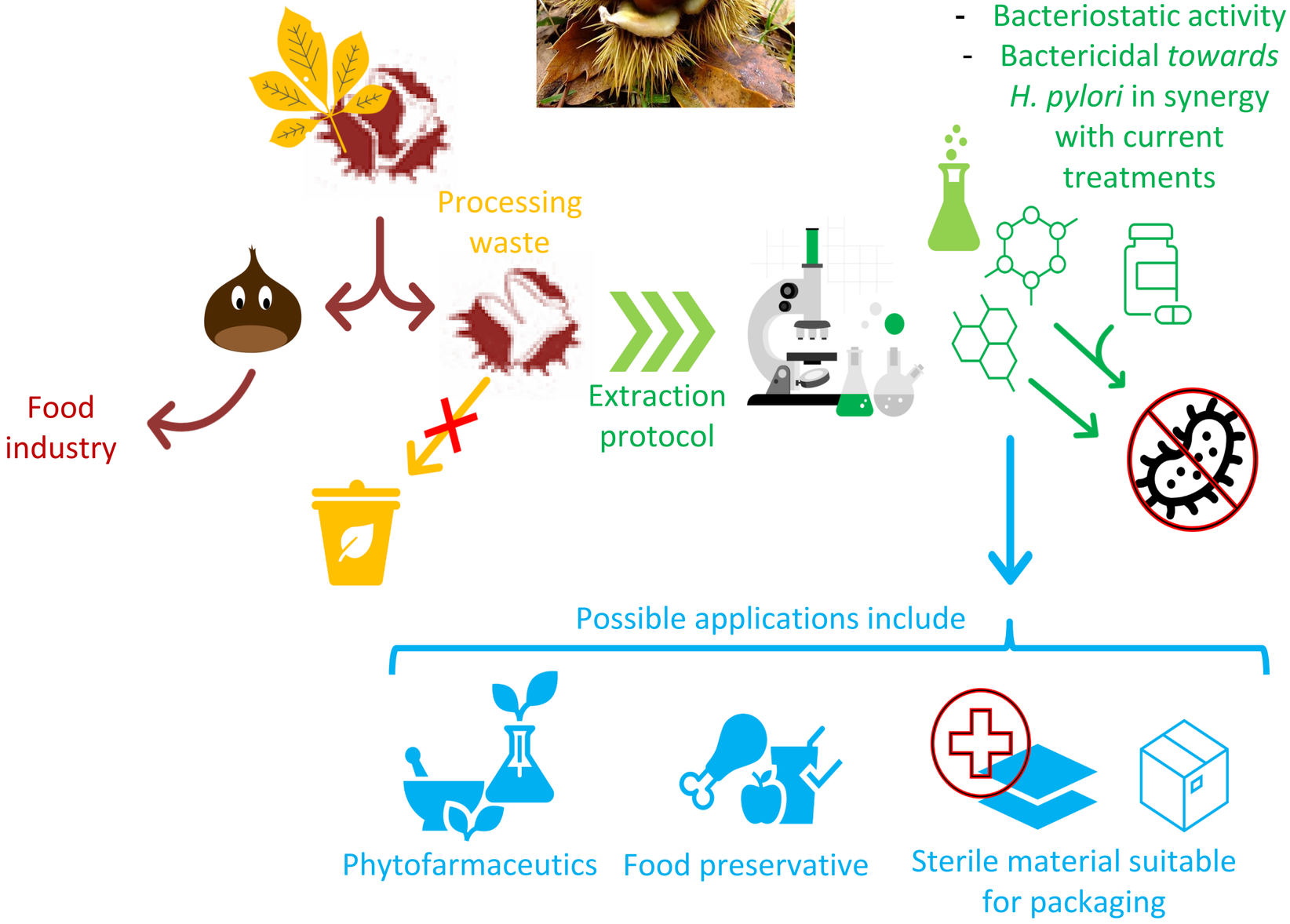
Invention

The present innovation refers to the field of bioeconomy, using biological materials of industrial waste for phytopharmaceutical use. Specifically, the shells of three varieties of chestnut (*Castanea sativa*) were treated with a hydroalcoholic solution. The extract exhibited an antibacterial activity. The process has been optimized to obtain the extract from minimum quantities of starting plant material, which confers sustainability to the procedure.

The hydroalcoholic extract thus obtained has been shown to possess bacteriostatic activity when used alone against Gram-positive and Gram-negative bacteria. When tested against *Helicobacter pylori*, the extract was bactericidal. Used in combination with antibiotics against *H. pylori*, the extract acts synergistically when associated with clarithromycin. The extract potentiated the antimicrobial effect of metronidazole. The activity of other antibiotics was not influenced by the extract. This characteristic may reduce the posology of some antibiotics in the treatment of *H. pylori* infection and hamper the selection of drug resistance, which increasingly limits the available therapies.

Drawings
& pictures



Industrial applications

The innovation finds application in different industrial areas, especially in the Agrifood and in Life Sciences. Thanks to the sustainable and economic extraction process, interested companies operating in the aforementioned sectors would be able to include in their products a natural and effective antibacterial extract starting from minimum quantities of starting material.

Given the antibacterial and/or bacteriostatic properties, the hydroalcoholic extract from chestnut shell waste could be useful to companies operating in technological solutions for food preservation as a preservative and/or additive for food and feed. Companies operating in sectors such as packaging and materials for packaging may be interested in the use of hydroalcoholic extract of *C. sativa* shells for the production of sterile stuff.

Finally, the hydroalcoholic extract could be of interest to companies operating in the (phyto)pharmaceutical sector as a medicament for the treatment of bacterial infections.

Possible developments

The patent application has not yet been published.

Interested companies will therefore be required to sign a specific non-disclosure agreement to have specific information and/or discussing the innovation.

The University of Siena is open to sign specific development, refinement, option or licensing agreements with interested companies.

The starting TRL of innovation currently stands at level 04.

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