Scientists make wine and cheese using weeds

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Scientists at South Ural State University (SUSU) have discovered that the extract of a common weed plant, Bidens pilosa, is a promising source of enzymes for the food industry. According to the authors, the technique can produce cheaper plant alternatives to expensive enzymes necessary in wine and cheese production. The study is published in the

International Journal of Scientific and Technology Research.

As part of the work of the International Laboratory for the Synthesis and Analysis of Food Ingredients, the scientists proved that the Bidens pilosa leaf extract accelerates the breakdown of proteins, which makes it suitable for obtaining biologically active compounds like tyrosine, first isolated from cheese in 1846, and among the proteins expressed by all living organisms.

"There is a long tradition of using Bidens pilosa as a medicine. Due to its prevalence, its use, in our opinion, is extremely beneficial in winemaking and milk processing, where the Bidens pilosa extract can become an alternative to many food animal enzymes," said Irina Potoroko, head of the Department of Food Technology and Biotechnology.

In the experiments, the researchers proved that fresh leaves of Bidens pilosa have high protease activity in an acidic buffer pH 4 (8.2567×10^{-7} mM / mg / min) compared to an alkaline buffer pH 10 (5.15×10^{-7} mM / mg / min) at 30 degrees Celsius. The scientists were able to determine the optimal conditions for the enzymatic activity of the leaf extract, which makes it possible to use in various technological processes.

Irina Potoroko believes that it is necessary to continue the research in order to find out which part of the plant (roots, stem, flowers) has the greatest protease activity, because the research carried out at SUSU was focused only on fresh leaves.

At the next stage of the work, the research team intends to study the mechanism of encapsulation, transportation and release of the Bidens pilosa extract to increase the efficiency of fermentation processes.

Bidens pilosa is widespread in the world as a weed imported from America. In Russia, the plant was found in the Far East. Bidens pilosa

belongs to the quarantine weeds prohibited for import.

More information: Potoroko et al., Protease Activity In Flesh Leaves Of Bidens Pilosa, *International Journal of Scientific & Technology Research* (2020). www.ijstr.org/paper-references … ref=IJSTR-1019-23095

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