



How to train grass pea small-scale food processors on Asian style fermentations?

Problem

Food trends are pushing processors to diversify their range of tasty and healthy plant-based products using minimal processing methods.

Fermentation offers a solution to this challenge. However, small-scale processors, working with minor cereals and underused legumes often lack the experience to implement these mild processing techniques on their own.

Solution

A collaborative effort involving small-scale processors from Portugal's traditional grass pea production region, Alvaiázere (ADECA associates), along with food technologists (Cooking Lab) and plant researchers (UNL), led to a hands-on workshop on grass pea Miso production. The workshop provided both theoretical and practical training, equipping small-scale local processors with the skills to produce Eastern fermented foods from grass pea like Miso. This opened opportunities to start using grass pea Miso as a clean-label ingredient, helping to diversify traditional Western food products.

Benefits

Miso is a Japanese fermented paste, traditionally made from soybeans, and commonly used as a seasoning or in dishes like miso soup. To produce miso, soaked and boiled soybeans are mixed with water, salt, and inoculated with a starter - often an older batch of Miso, similar to how sourdough bread is made. Koji, which is typically made of soybeans, rice, or barley inoculated with the fungus *Aspergillus* sp., is also added to aid the fermentation process.

Prior to this workshop, a grass pea sweet miso was developed to increase this legume's usage and consumption, merging the benefits of both the grass pea and fermented foods. Compared to traditional soybean Miso, grass pea sweet miso contained less fat, slightly lower levels of sodium chloride, and ten times more antioxidants, making it a very interesting alternative to the traditional version.

The grass pea Miso used as a clean label ingredient (meaning no artificial colours or flavouring agents), is expected to enhance food diversity and increase legume consumption, while supporting environmentally sustainable local production of this neglected, yet traditional, crop. Indeed, the DIVINFOOD goal is to use this innovative fermented paste to develop new food products with added-value, aligned with the most recent food trends.

Applicability box

Theme

Processing of grain legumes

Required time

Less than 1 day workshop preparation;
1-2 hours for miso preparation

Equipment

Standard blender, standard cooking equipment

Best in

Grass pea, can be applied to other legumes with adaptations



Figure 1: Grass pea Miso Hands On Workshop (E. Mecha/UNL)

Practical recommendation

Grass Pea Sweet Miso Ingredients:

Soaked and cooked grass pea seeds, Rice Koji, Salt, a sample from an older batch of unpasteurized miso, Water Briefly, and during the workshop, a grass pea paste obtained from properly washed, soaked and cooked grass peas was mixed with rice koji and sea salt (10:9:1 mass ratio). The mixture was packed tightly into salt-coated glass jars, leaving a 1.5 cm head-space, and the top was covered with salt. The containers were closed and incubated at room temperature, for at least for three months. The miso was then ready to be added to recipes to make other food products (Figure 2).



Figure 2: Grass pea Miso production step-by-step (E. Mecha/UNL)

Further information

Further readings

Santos, R.; Mansidão, A.; Mota, M.; Raymundo, A.; Prista, C. Development and Physicochemical Characterization of a New Grass Pea (*Lathyrus sativus* L.) Miso. *J. Sci. Food Agric.* 2021, 101, 2227–2234.

Weblinks

Divinfood's webpage on GRASS PEA: <https://divinfood.eu/grass-pea-nuc/>

About this practice abstract and DIVINFOOD

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DIVINFOOD - Co-constructing interactive short and mid-tier food chains to value agrobioDiversity IN healthy plant-based FOOD, is running from March 2022 to Feb 2027.

The overall goal of DIVINFOOD (a multi-actor, participatory project) is to facilitate the use and increase the value of Neglected and Underutilised Crops (NUCs) in food chains to foster healthier diets and more sustainable food systems.

Project website: www.divinfood.eu

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