

★★★ <第36回知的財産翻訳検定試験【第19回和文英訳】> ★★★  
《1級課題 -バイオテクノロジー-》

【問1】

The normal fetal position during the final stage of pregnancy is one in which the fetal head is within the mother's lesser pelvic cavity and the trunk is positioned in the maternal abdomen outside the pelvis. This is referred to as head presentation. However, apart from head presentation, it is said that abnormal presentations, such as the breech position (a position in which the fetal pelvis and buttocks are within the mother's lesser pelvic cavity), occur at a ratio of three to five percent of all childbirths.

As is well-known, the fetus is supplied with nutrition and oxygen via the umbilical cord, which is about 50 cm long, originating from the placenta attached to the inner side of the uterus and reaching the navel of the fetus. The breech position accounts for the majority of abnormal presentations, and in vaginal breech delivery, the trunk is delivered (i.e., exits from the uterus due to the force of delivery) first, and the head, having the maximum diameter of the fetus, is delivered last. As such, after delivery of the trunk, it may take time for the maternal soft birth canal to dilate sufficiently and for the head to be delivered. However, during such time, the umbilical cord, which supplies nutrients and oxygen to the fetus, is squeezed between the maternal birth canal and the fetal head, and oxygen supply to the fetus is disrupted.

【問2】

The method of the present invention for increasing the content of a mushroom component may further comprise carrying out stalk elongating cultivation during cultivation of the fruiting body.

“Stalk elongating cultivation” is a method in which the part of the plant that becomes the stalk is wrapped with paper so that the stalk will grow to become elongated. In the case of mushrooms, the fruiting body is wrapped with paper during cultivation of the fruiting body or during part of the cultivation period to prevent lateral spreading of the fruiting body and to allow the stipe to grow to become elongated. As for cultivation of enokitake mushrooms, in general, stalk elongating cultivation is carried out. In the present invention, and during cultivation of bunashimeji mushrooms, when

the free amino acid contents in the pileus and stipe were compared, it was found that the stipe had higher amino acid contents of ornithine, arginine, aspartic acid and the like, which are involved in the ornithine cycle (Figure 1). Further, growing the stipe longer to increase the contents of those amino acids was considered. In the present invention, stalk elongating cultivation was also carried out for bunashimeji mushrooms, and the effects on the components of the obtained mushrooms were examined.

**【問 3】**

(Complementation experiments by genome editing)

Vectors were constructed, by which an NHEJ repair error is to be induced at the 271st amino acid downstream of the VHIID motif (amino acids 228-232) of SEQ ID No. 10 in *Arabidopsis thaliana*, and *Arabidopsis* (Col-0 strain) was transformed by the floral dip method. Genome-edited individuals were selected by RFP fluorescence and sequence reading. Then, from the progeny of the selected individuals, null segregant individuals, in which the mutant allele was homozygous and the vector had been removed, were selected, and their seeds were collected. The seeds of these genome-edited lines and those of the wild-type (Col-0) control were sown aseptically on 1/2 MS medium and grown for 4 weeks under the conditions of 22°C and 10 hours of light period, and then the phenotypes were compared.

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The genome-edited lines with fixed mutant alleles and the wild type lines were seeded on the medium, and their phenotypes were compared after 4 weeks of cultivation. The results showed that the genome-edited lines had larger plant size compared to the wild type line (Fig. 4). This result is consistent with the phenotype observed in high-yield Dutch tomatoes.

**【問 4】**

Claims:

1. An extraction method for preparing an extract from a peanut, comprising an extraction step of preparing the extract using water, ethanol or a mixture thereof as an extraction solvent in accordance with an expected physiologically active effect, wherein

the extract is an extract that promotes or inhibits the effect of the

physiological activity; and

the effect of the physiological activity comprises at least one selected from a group consisting of an anti-dementia effect to alleviate or inhibit dementia, motivation-increasing effect and sleep-improving effect.

2. The extraction method according to claim 1, wherein in the extraction step, the extract is prepared using water, ethanol, hexane, or a mixture liquid thereof as the extraction solvent in accordance with the expected physiologically active effect.

3. The extraction method according to claim 1 or 2, wherein the peanut is a peanut with a thin skin.

4. The extraction method according to claim 1, wherein the peanut is a peanut without a thin skin.

5. The extraction method according to any one of claims 1 to 4, wherein the anti-dementia effect, the motivation-increasing effect and the sleep-improving effect are realized by gene expression of nerve growth factor, and the extract prepared in the extraction step has an effect on the gene expression of the nerve growth factor.