★★★＜第 20 回知的財産翻訳検定試験【第 11 回和文英訳】＞★★★
<<バイオテクノロジー >>

問 1

The present invention is based on the discovery that ingredients of a fraction obtained from extract of a fruit of Theobroma cacao, namely, a cacao pod, which has been used as food, can be used for a neutralizing agent of endotoxin activity. The ingredients of may be directly applied to humans, and used as a medicament for suppressing endotoxin activity in vivo.
Endotoxin is present in the outer membrane surface of every Gram-negative bacterium. Endotoxin binds to a variety of cells or biological components, due to transfer to blood caused by damage to intestinal barrier function or due to the presence of endotoxin in the blood caused by infection of Gram-negative bacteria, whereby endotoxin shock, death, fever, inflammation, Shwartzman reaction, hyper immune enhancement, activity of coagulation-complement or the like is induced.
The objective of the present invention is to inhibit such harmful effects of Endotoxin with a novel fraction of the extract obtained from a cacao pod.
In particular, in order to prevent disorders induced by endotoxin, it is important that the ingredients of the fraction of the extract obtained from a cacao pod, which has been used as food, can neutralize and detoxify the endotoxin activity, and , when orally taken, are transferred into the blood.

問２

According to an aspect of the present invention, there is provided a method of selecting and acquiring a domain polypeptide interacting with a target substance, in accordance with a method described below. The "domain polypeptide" comprises a "domain" which is a minimum unit required for the interaction with the target substance, and has a structure in which a polypeptide consisting of amino acid residues having a length of 30% or less than the amino acid length of the domain attaches to the domain. The polypeptide may be attached to either of C-terminus or N-terminus, or both. The "domain" which is a minimum unit required for the interaction with the target substance is a partial structure of a protein, and has a stable conformation in itself. The "domain" means a unit having a function of binding to and interacting with the target substance. According to the present invention, the domain may be known or unknown.

The term "interact" means that as a result of the binding of a protein or polypeptide to the target substance, the protein or polypeptide controls the function of the target substance or the function of the protein or polypeptide is controlled by the target substance.

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Example

Specifically, CrtM gene and CrtN gene derived from Staphylococcus aureus were introduced into E.coli, and a gene encoding wild-type geraniol synthase (GES) or a gene encoding its mutant (GESM) were introduced into the resulting E.coli. The E.coli was cultured and then geraniol synthase activity of the cells was measured based on the amount of the pigment synthesized in the cells.

As shown in figure 4, when an empty vector was introduced

into E. coli transformed with pAC-CrtM-CrtN, an expression construct of the CrtM gene and the CrtN gene, the resulting cells (Void) accumulated a yellow pigment 4,4’-diaponeurosporene and became yellow. In contrast, when E.coli transformed with pAC-CrtM-CrtNand was further transformed with pLac-ges, an expression construct of the GES gene, or an expression construct of the GESM53 gene, the accumulation of the yellow pigment remarkably decreased and the cells became white. Such whitening of the cells or decrease of pigment synthesis was not observed in E.coli transformed with pAC-CrtM-CrtN and pLac-gesD323A, an expression construct of a gene encoding an inactive GES mutant.

The above results reflect the fact that GES showed a high activity of substrate consumption in the cells and the amount of geranil 2-phosphate (GPP), a precursor of a carotenoid pigment necessary for its production, significantly decreased.

問 4

Claims:

1. A method for selecting an anticancer drug by a screening procedure, comprising
step 1: culturing an iPS cell in the presence of a factor contained in a conditioned medium of a cancer cell to induce a cell population comprising heterologous cancer stem cells; and
step 2: administering a candidate substance of the anticancer drug to the cell population comprising heterologous cancer stem cells to select an anticancer drug effective for the cancer stem cells by a screening procedure.

2. The method for selecting an anticancer drug by a screening procedure according to Claim 1, wherein
in step 1, the iPS cell is cultured in the presence of a factor contained in the conditioned medium of each of a plurality of cancer cells, each of the cancer cells having a different phenotype, to induce a plurality of cell populations comprising heterologous cancer stem cells, each of the cell populations having a different phenotype; and
in step 2, efficacy of the candidate substrate is examined for each of the plurality of the cell populations comprising heterologous cancer stem cells, each of the cell populations having a different phenotype.

3. A cell population comprising heterologous cancer stem cells with various differentiation levels between iPS cells and cancer cells.