

EXPRESSION OF HEME BIOSYNTHESIS AND HEME PROTEINS IN EDIBLE FILAMENTOUS FUNGI

Tech ID: 32521 / UC Case 2022-025-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

The inventors have overexpressed heme biosynthesis genes in edible filamentous fungi to elevate heme levels beyond the endogenous levels already produced in these organisms. Overexpression of key biosynthetic enzymes, including a Heme Regulatory Motif (HRM) mutant in ALAS, as well as ALAD, UROD, HEMC, UROD, and FC, in different combinations in the edible filamentous fungus *Aspergillus oryzae* NSAR1, significantly increased heme levels up to 15-fold above the non-engineered background strain, as assessed by LC-MS. The fungal biomass is red in appearance and is used in meat replacement, including burgers, filets and other whole-cut formulations, bacon, and sausages. The invention gives fungal biomass a meat-like flavor.

SUGGESTED USES

Possible applications include meat replacement products, including burgers, filets and other whole-cut formulations, bacon, and sausages.

ADVANTAGES

- » Significantly increased heme levels up to 15-fold above a non-engineered background strain
- » Gives fungal biomass a meat-like flavor
- » Fungal biomass is red in appearance

RELATED MATERIALS

CONTACT

Laleh Shayesteh
lalehs@berkeley.edu
tel: 510-642-4537.



INVENTORS

» Keasling, Jay D.

OTHER INFORMATION

KEYWORDS

heme biosynthesis, biosynthetic, meat replacement

CATEGORIZED AS

- » **Biotechnology**
- » Food

RELATED CASES

2022-025-0