

[ABSTRACT]

Provided are a polypeptide having carnosine synthase activity; a polynucleotide encoding the polypeptide; a microorganism including any one or more of the polypeptide, the polynucleotide, and a vector including the polynucleotide; a variant polypeptide having carnosine synthase activity; a polynucleotide encoding the variant polypeptide; a microorganism including any one or more of the variant polypeptide, the polynucleotide, and a vector including the polynucleotide; a composition for producing carnosine, the composition including any one or more of the polypeptide having carnosine synthase activity, the variant polypeptide, the microorganism, and a culture of the microorganism; a method for producing carnosine using any one or more of the polypeptide having carnosine synthase activity, the variant polypeptide, and the microorganism; and use of the polypeptide having carnosine synthase activity, the variant polypeptide, and the microorganism for producing carnosine.