CLAIMS

1. Process for the enzymatic conversion of an L-methionine precursor with methyl mercaptan to obtain L-methionine, wherein the methyl mercaptan partial pressure in the reaction vessel over the reaction medium ranges from 10 kPA to 180 kPA, preferably from 51 kPa to 180 kPa, more preferably from 51 kPa to 160 kPa, still more preferably from about 80 kPa to about 160 kPa, advantageously from about 90 kPa to about 150 kPa, for example the CH_3SH partial pressure is about 100 kPa to 150 kPa, at the reaction temperature.

2. Process according to claim 1, wherein the reaction temperature ranges from 20°C to 45°C, preferably from 25°C to 40°C, still more preferably from 30°C to 40°C.

3. Process according to any of the preceding claims, wherein the L-methionine precursor is chosen from among O-succinyl homoserine (OSHS) and O-acetyl homoserine (OAHS), and preferably is OAHS.

4. Process according to any of the preceding claims, wherein the enzyme used for the enzymatic conversion is prepared using expression of genes according to biotechnological processes.

5. Process according to any of the preceding claims, wherein the enzyme used for the enzymatic conversion is chosen from cystathionine-γ-synthase or O-acetyl homoserine sulfhydrylase or O-succinyl homoserine sulfhydrylase derived from *Pseudomonas* sp., *Chromobacterium* sp., *Leptospira* sp. or *Hyphomonas* sp..

6. Process according to any of the preceding claims, wherein the pH of the reaction is maintained at about a neutral or slightly acid value, preferably the pH of the reaction medium is maintained between 6 and 7.

7. Process according to any of the preceding claims, wherein a co-enzyme is added, said co-enzyme being preferably pyridoxal-5'-phosphate.

8. Process for the preparation of L-methionine comprising the steps of:

1) preparing a L-methionine precursor-producing strain and producing a L-methionine precursor by the fermentation of the strain,
2) converting said L-methionine precursor into L-methionine, according to the enzymatic conversion process of any of claims 1 to 7, and
3) collecting the obtained L-methionine.

9. Process according to claim 8, wherein said L-methionine precursor-producing strain is a prokaryotic or eukaryotic microorganism strain that is able to accumulate L-methionine precursor.

10. Process according to claim 9, wherein the strain is chosen from the group consisting of *Escherichia* sp., *Erwinia* sp., *Serratia* sp., *Providencia* sp., *Coryne* bacteria sp., *Pseudomonas* sp., *Leptospira* sp., *Salmonellar* sp., *Brevibacteria* sp., *Hypomononas* sp., *Chromobacterium* sp. and *Norcardia* sp. microorganisms or fungi or yeasts.

11. Process according to claim 9 or 10, wherein the strain is obtained in a culture medium that includes various carbon sources, nitrogen sources and trace elements.

12. Process according to claim 11, wherein the carbon source is chosen from the group consisting in glucose, sucrose, lactose, fructose, maltose, starch, cellulose, fat such as soybean oil, sunflower oil, castor oil and coconut oil; fatty acid such as palmitic acid, stearic acid, and linoleic acid; alcohol such as glycerol and ethanol; and organic acid such as acetic acid, as well as mixtures thereof.

CLAIMS

1. Process for the enzymatic conversion of an L-methionine precursor with methyl mercaptan to obtain L-methionine, wherein the methyl mercaptan partial pressure in the reaction vessel over the reaction medium ranges from 10 kPa to 180 kPa at the reaction temperature.

2. Process according to claim 1, wherein the methyl mercaptan partial pressure in the reaction vessel over the reaction medium ranges from 51 kPa to 180 kPa, at the reaction temperature.

3. Process according to any of the preceding claims, wherein the methyl mercaptan partial pressure in the reaction vessel over the reaction medium ranges from 80 kPa to 160 kPa, at the reaction temperature.

4. Process according to any one of the preceding claims, wherein the methyl mercaptan partial pressure in the reaction vessel over the reaction medium ranges from 100 kPa to 150 kPa, at the reaction temperature.

5. Process according to any one of the preceding claims, wherein the reaction temperature ranges from 20°C to 45°C.

6. Process according to any one of the preceding claims, wherein the reaction temperature ranges from 30°C to 40 °C.

7. Process according to any of the preceding claims, wherein the L-methionine precursor is chosen from among O-succinyl homoserine (OSHS) and O-acetyl homoserine (OAHS).

8. Process according to any one of the preceding claims, wherein the L-methionine precursor is OAHS.

9. Process according to any one of the preceding claims, wherein the enzyme used for the enzymatic conversion is prepared using expression of genes according to biotechnological processes.

10. Process according to any one of the preceding claims, wherein the enzyme used for the enzymatic conversion is chosen from cystathionine-γ-synthase or O-acetyl homoserine sulfhydrylase or O-succinyl homoserine sulfhydrylase derived from *Pseudomonas* sp., *Chromobacterium* sp., *Leptospira* sp. or *Hyphomonas* sp..

11. Process according to any one of the preceding claims, wherein the pH of the reaction is maintained at about a neutral or slightly acid value.

12. Process according to any one of the preceding claims, wherein the pH of the reaction is maintained between 6 and 7.

13. Process according to any one of the preceding claims, wherein a co-enzyme is added.

14. Process according to claim 13, wherein the co-enzyme is pyridoxal-5'-phosphate.

15. Process for the preparation of L-methionine comprising the steps of:

1) preparing a L-methionine precursor-producing strain and producing a L-methionine precursor by the fermentation of the strain,
2) converting said L-methionine precursor into L-methionine, according to the enzymatic conversion process of any of claims 1 to 14, and
3) collecting the obtained L-methionine.

16. Process according to claim 15, wherein said L-methionine precursor-producing strain is a prokaryotic or eukaryotic microorganism strain that is able to accumulate L-methionine precursor.

17. Process according to claim 16, wherein the strain is chosen from the group consisting of *Escherichia* sp., *Erwinia* sp., *Serratia* sp., *Providencia* sp., *Coryne* bacteria sp., *Pseudomonas* sp., *Leptospira* sp., *Salmonellar* sp., *Brevibacteria* sp., *Hypomononas* sp., *Chromobacterium* sp. and *Norcardia* sp. microorganisms or fungi or yeasts.

18. Process according to claim 16 or 17, wherein the strain is obtained in a culture medium that includes various carbon sources, nitrogen sources and trace elements.

19. Process according to claim 18, wherein the carbon source is chosen from the group consisting in glucose, sucrose, lactose, fructose, maltose, starch, cellulose; fat such as soybean oil, sunflower oil, castor oil and coconut oil; fatty acid such as palmitic acid, stearic acid, and linoleic acid; alcohol such as glycerol and ethanol; and organic acid such as acetic acid, as well as mixtures thereof.