

Claims:

1. A process for the preparation of a methionine α -hydroxy
analogue and derivatives thereof of the formula:



wherein R is selected from the group consisting of H,
C₁-C₈ alkyl, alkaline or alkaline-earth metals; and R'
is selected from the group consisting of H and methyl;
and wherein
the process comprises a step of contacting one or more
sugars or derivatives thereof with a metallo-silicate
composition in the presence of a compound comprising
sulphur and a solvent.

2. A process according to claim 1, wherein the compound
comprising sulphur is selected from the group consisting
of C₁-C₅ alkyl thiol, C₁-C₅ alkyl thiol salt, dimethyl-
mercaptan, dimethyl disulphide and hydrogen sulphide.

3. A process according to claim 2, wherein the compound
comprising sulphur is selected from the group consisting
of methane thiol, methanethiolate alkaline salts, dime-
thylmercaptan, dimethyl disulphide, and hydrogen sul-
phide.

4. A process according to any one of claims 1 to 3, wherein
the one or more sugars or derivatives thereof is select-
ed from the group consisting of glucose, fructose, ga-
lactose, mannose, sucrose, xylose, erythrose, erythru-

lose, threose, glycolaldehyde, methyl vinyl glycolate, vinyl glycolic acid and 2-hydroxy- γ -butyrolactone.

- 5 5. A process according to any one of claims 1 to 3, wherein the one or more sugars or derivatives thereof are derivatives obtained by subjecting one or more sugars selected from the group consisting of glucose, fructose, galactose, mannose, sucrose, xylose, erythrose, erythrose, threose; to a pyrolysis step to obtain a pyrolysis product and subsequently contacting the pyrolysis product with the metallo-silicate composition in the presence of the compound comprising sulphur and the solvent.
- 10 6. The process according to any one of claims 1 to 5, wherein the metallo-silicate composition is a zeotype material.
- 15 7. The process according to claim 6, wherein the zeotype material is one or more materials selected from the group consisting of Sn-BEA, Sn-MFI, Sn-FAU, Sn-MCM-41 and Sn-SBA-15.
- 20 8. The process according to any one of claims 1 to 7, wherein the solvent is selected from one or more of the group consisting of methanol, ethanol, 1-propanol, 1-butanol, 2-propanol, 2-butanol, DMSO and water.
- 25 9. The process according to any one of claims 1 to 8, wherein the methionine α -hydroxy analogue and derivatives thereof are selected from the group consisting of 2-hydroxy-4-(methylthio)butanoic acid, salts and esters thereof.
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10. The process according to any one of claims 1 to 9,
wherein the methionine α -hydroxy analogue and deriva-
tives thereof are selected from the group consisting of
2-hydroxy-4-(methylthio)butanoic acid, 2-hydroxy-4-
5 (methylthio)butanoic acid methyl ester and 2-hydroxy-4-
(methylthio)butanoic acid ethyl ester.
11. The process according to any one of claims 1 to 10,
wherein the one or more sugars or derivatives thereof
10 are contacted with the metallo-silicate composition in
the presence of the compound comprising sulphur and the
solvent under heating.
12. The process according to claim 11, wherein the heating
15 temperature is between 50 and 200°C, preferably of be-
tween 80 and 120 °C.
13. The process according to any one of claims 11 to 12,
wherein the heating is continued for a period of from 10
20 minutes to 12 hours, preferably of from 20 to 300
minutes.
14. The process according to any one of claims 1 to 13,
wherein the one or more sugars or derivatives thereof
25 are contacted with the metallo-silicate composition in
the presence of the compound comprising sulphur and the
solvent and in the presence of one or more basic compo-
nents selected from the group consisting of a metal salt
and a polymer resin.
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15. The process according to any one of claims 1 to 14,
wherein the yield of the methionine α -hydroxy analogue

and derivatives thereof are greater than the yield of methyl vinylglycolate (MVG).

16. The process according to any one of claims 1 to 15,
5 wherein the yield of the methionine α -hydroxy analogue
and derivatives thereof is greater than 15%.
17. The process according to any one of claims 1 to 16,
 wherein the process is a continuous process.
- 10 18. The process according to claim 17, wherein the weight
hourly space velocity is between 0.005 and 10 h⁻¹, preferably
between 0.1 and 1 h⁻¹.
- 15 19. The process according to any one of claims 1 to 18,
 wherein the methionine α -hydroxy analogue and derivatives
thereof are recovered.
- 20 20. The process according to any one of claims 1 to 19,
 wherein the methionine α -hydroxy analogue and derivatives
thereof are recovered by purification.
21. The process according to any one of claims 1 to 20,
 wherein the methionine α -hydroxy analogue and derivatives
25 thereof are purified by distillation.
22. The process according to claim 9, wherein the 2-
 hydroxy-4-(methylthio)butanoic esters are hydrolysed.
- 30 23. A 2-hydroxy-4-(methylthio)butanoic acid, salts and esters
thereof obtainable by the process according to any
one of claims 1 to 22, characterized in that the ¹⁴C

content is above 0.5 parts per trillion of the total carbon content.

5 24. A 2-hydroxy-4-(methylthio)butanoic acid, salts and esters thereof, characterized in that the ^{14}C content is above 0.5 parts per trillion of the total carbon content.

10 25. Use of 2-hydroxy-4-(methylthio)butanoic acid, salts and esters thereof prepared by the process according to any one of claims 9 to 22 or the product according to claim 23 or 24 for a nutritional supplement.