Accordingly, it is desirable to provide an alternative process for the preparation of methionine α-hydroxy analogue and derivatives thereof. In particular, it is desirable to provide a process that is industrially feasible, it is therefore desirable that the process is high yielding, direct and selective. It is desirable that the process is carried out under conditions that are industrially feasible, with regents or catalysts that enable ease of production and reduced toxic waste, such as the use of heterogenous catalysts that may be regenerated. Additionally, the provision of a process wherein the substrates are derived from renewable sources such as C2-C6 sugars, is desirable. In particular because the sugar substrates are much less toxic and much cheaper than, for example acrolein and the HCN reagent, consequently the use of sugar substrates significantly lowers the costs of production.

Summary

In one aspect of the present disclosure, there is provided a process for the preparation of a methionine α-hydroxy analogue and derivatives thereof of the formula:

R'-S-CH2-CH2-CHOH-COO-R (I)

wherein R is selected from the group consisting of H, C_1-C_8 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.

In another aspect of the present disclosure, there is provided a 2-hydroxy-4-(methylthio)butanoic acid, salts and esters thereof obtainable by the process disclosed herein, characterized in that the ^{14}C content is above 0.5 parts per trillion of the total carbon content.

In a further aspect of the present disclosure, there is provided 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.

In another aspect of the present disclosure, there is provided a use of 2-hydroxy-4-(methylthio)butanoic acid, salts and esters thereof prepared by the process disclosed herein or the product disclosed herein for a nutritional supplement.

Disclosure of the Invention

It has surprisingly been found that a methionine α-hydroxy analogue and derivatives thereof is obtainable by contacting one or more sugars with a metallo-silicate composition in the presence of a compound comprising sulphur and a solvent.

The methionine α-hydroxy analogue and derivatives thereof may be represented by the formula
R'-S-CH2-CH2-CHOH-COO-R (I),
wherein R is selected from the group consisting of H, C_1-C_8 alkyl or alkaline or alkaline-earth metals; and R' is selected from the group consisting of H and methyl.