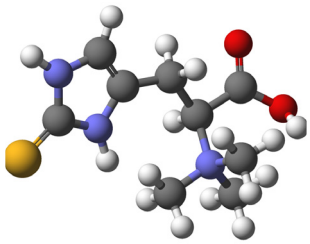

Production of potent antioxidant-ergothioneine

Researchers at UCT have developed a process for synthesising ergothioneine. Ergothioneine is a naturally occurring amino acid that has antioxidant to counter the oxidative stress caused by free radicals. Unfortunately, humans cannot produce it and rely exclusively on acquisition of the amino acid via the diet.

Ergothioneine is produced in certain types of bacteria and fungi, and is absorbed by plants through their association with fungi-rich soils. Modern agricultural practices have drastically reduced fungal content of soil, ultimately reducing the amount of ergothioneine available in plant foods.

Existing synthetic methods for ergothioneine are very difficult to reproduce and often generate very low yields. Our method is superior in that it allows for good reproducibility with an overall yield of up to 80%.

Benefits

- The process starts with N-benzyl protected histidine. The protection of the histidine allows for more stable intermediates to be produced, shortening and simplifying subsequent process steps
- Increased overall yield of up to 80% is achieved at room temperature, which is significantly better than existing processes

Market

Producers of food supplements and nutraceuticals.

Technical description

The new process for synthesising ergothioneine entails deprotecting an N-benzyl protected histidine to form N-benzyl histidine, converting N-benzyl histidine to two propanoic acid intermediates, brominating the imidazole ring of the last proponaoic acid to form 5-bromohercynine lactone, and converting 5-bromohercynine lactone to a stable ergothioneine sulfide intermediate. The sulfide intermediate can then be cleaved either non-enzymatically (using pyridoxal phosphate or PLP) or enzymatically (using EgtE enzyme) to form ergothioneine.

Keywords:
MRI, patient tracking, MRI orientation, image correction

Intellectual Property Rights:
PCT: PCT/IB2015/001668

Technology Readiness Level:
3 - Proof of concept

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