

[54] PREPARATION AND METHOD OF USE OF ENZYME EFFECTIVE FOR CONVERSION AND DETECTION OF CARBON MONOXIDE

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[ \* ] Notice: The portion of the term of this patent subsequent to Sept. 28, 1993, has been disclaimed.

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 659,199, Feb. 19, 1976, Pat. No. 3,982,897, which is a continuation-in-part of Ser. No. 292,011, Sept. 25, 1972, which is a continuation-in-part of Ser. No. 151,153, June 8, 1971, abandoned, and Ser. No. 102,869, June 8, 1971, Pat. No. 3,693,327, which is a continuation-in-part of Ser. No. 85,087, Oct. 29, 1970, abandoned.

[51] Int. Cl.<sup>2</sup> ..... A24B 15/027; G01N 31/14; C07G 7/02

[52] U.S. Cl. .... 131/266; 195/63; 195/66 R; 195/103.5 R; 195/127

[58] Field of Search ..... 195/62, 63, 65, 66 R, 195/127, 103.5 R; 131/266

[56] References Cited

U.S. PATENT DOCUMENTS

3,982,897 9/1976 Scheinberg ..... 195/63 X

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[57] ABSTRACT

An enzyme referred to as carbon monoxidase and referred to hereinafter as CMase is present in red blood cells and in various bacteria and plants, including algae and fungi. The enzyme is effective for the conversion of carbon monoxide in a gas stream. Where the conversion is the step of oxidizing CO to CO<sub>2</sub>, the enzyme can be used for detection of CO. The procedure lends itself to quantitative determination of CO in a gas stream. The production of CMase can be accelerated by growing bacterial cultures or plants in an atmosphere containing an increased concentration of carbon monoxide. Increasing the concentration of oxygen simultaneously is also beneficial to the process.

A filter medium including CMase can substantially decrease the concentration of carbon monoxide in a gas stream, the gas stream of particular interest being tobacco smoke. Combining the CMase in a filter with compounds which bind CO reversibly presents advantages.

47 Claims, 3 Drawing Figures