



- [54] LIVER FUNCTION BREATH TEST USING AROMATIC AMINO ACIDS
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- [21] Appl. No.: 75,662
- [22] Filed: Jun. 11, 1993
- [51] Int. Cl.⁶ A61B 5/08; A61B 6/00
- [52] U.S. Cl. 128/665; 128/719; 128/898
- [58] Field of Search 424/1.81; 514/567; 436/57, 900; 73/23.3; 128/654, 659, 718, 719, 730, 664, 665, 898

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References Cited

U.S. PATENT DOCUMENTS

4,830,010 5/1989 Marshall 128/630
 5,100,779 3/1992 Watkins 435/25

OTHER PUBLICATIONS

Shanhogue et al., "Whole Body Leucine, Phenylalanine, and Tyrosine Kinetics in End-Stage Liver Disease Before and After Hepatic Transplantation" *Metabolism* Nov. 1987, vol. 36, No. 11, pp. 1047-1053, as abstracted in Medline, AN88038269.

Baker et al., "The aminopyrine breath test does not correlate with histologic disease severity . . .," *Hepatology*, (1987 May-Jun.), 7(3):464-7, as abstracted in Medline AN87192470.

Schoeller et al., "Comparison of different methods expressing results of the aminopyrine breath test . . .," *Hepatology*, (1982 Jul.-Aug.), 2(4):455-62 as abstracted in Medline, AN 82237831.

Hehir et al., "Abnormal Phenylalanine Hydroxylation and Tyrosine Oxidation in a Patient With Acute Fulminant Liver Disease With Correction by Liver Transplantation" *Gastroenterology* 1985, vol. 89, No. 3, pp. 659-663.

Neale et al., "The metabolism of ¹⁴C-labelled essential amino acids given by intragastric or intravenous infusion to rats on normal and protein-free diets" *British Journal of Nutrition* 1974, vol. 32, pp. 11-25.

Ball et al., "Influence of dietary protein concentration on the oxidation of phenylalanine by the young pig" *British Journal of Nutrition* 1986, vol. 55, pp. 651-658.

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ABSTRACT

A test for determining hepatic function has been developed. This test uses oral administration of isotope labeled phenylalanine or tyrosine, particularly ¹³C-phenylalanine, in a rapid breath test. In the preferred mode, the breath sample is analyzed using a mass spectrometer and compared with a standard. The breath test provides a dynamic rather than static determination of hepatic function and can be used for both early and late stage liver problems.

9 Claims, No Drawings