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# United States Patent [19]

Majnarich et al.

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- [54] STRAIN OF *LACTOBACILLUS PLANTARUM*
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- [58] Field of Search ..... 435/252.9; 424/93.45

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

- 4,678,773 7/1987 Usami et al. .
- 5,352,586 10/1994 Dobrogosz et al. .
- 5,439,678 8/1995 Dobrogosz et al. .

**FOREIGN PATENT DOCUMENTS**

- 1254002 8/1986 U.S.S.R. .
- 1339124 9/1987 U.S.S.R. .
- 1678832 9/1991 U.S.S.R. .

**OTHER PUBLICATIONS**

Giori et al., "Effect of pH and temperature on the proteolytic activity of Lactic Bacteria", 1985, J Dairy Sci, 68 (9), pp. 2160-2164.

Mollin et al. "Numerical taxonomy of Lactobacillus spp. associated with healthy and disease mucosa of the human intestines", Journal of Applied Bacteriology, 1993, 74 (3), pp. 314-323.

Kang et al., "Immunostimulation effects of cell wall components isolated from Lactobacillus plantarum", J. Microbiol. Biotechnol. 1994, 4 (3), p. 195199.

Carson et al., "Synthesis of 2,3-dideoxynucleosides by enzymatic trans-glycosylation", Biochemical and Biophysical Research Communications, 1988, 155 (2), pp. 829-834.

Cinatl et al., "Invitro anti-human immunodeficiency virus activity of 2,3-dideoxynucleosides and their effect on clonal growth of hemopoietic cells from human bone marrow", *Arzneim.—Forsch.*, 1993, 43(5), pp. 622-625.

J.R. Tennant, "Evaluation of the Trypan Blue Technique for Determination of Cell Viability," Transplantation Articles, Nov. 1964, vol. 2, No. 6, pp. 685-694.

R.I. Geran, N.H. Greenberg, M.M. Macdonald, A.M. Schumacher, and B.J. Abbott, "Protocols for Screening Chemical Agents and Natural Products Against Animal Tumors and Other Biological Systems," Cancer Chemotherapy Reports, Sep. 1972, Part 3, vol. 3, No. 2, pp. 1-103.

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[57] **ABSTRACT**

The invention relates to a biologically pure strain of *L. plantarum*, *L. plantarum*, OM. The *L. plantarum*, OM strain has proteolytic, anti-viral, anti-retroviral, anti-bacterial, anti-microbial, and anti-tumoral characteristics and uses. Thus, the invention relates to agents having proteolytic, anti-viral, anti-retroviral, anti-bacterial, anti-microbial, and anti-tumoral agents, having the respective capabilities. With respect to its anti-viral capability, the provided strain includes the capacity to screen a pharmaceutical agent to determine whether the pharmaceutical agent has any anti-retrovirus activity. The invention also relates to a nutritional supplement having proteolytic activity and utilizing the *L. plantarum*, OM ATCC 55981 strain.

**9 Claims, 1 Drawing Sheet**