

SPECIFICATION

TITLE OF THE INVENTION

HEALTHFUL COMPOSITION

TECHNICAL FIELD OF THE INVENTION

The present invention relates to a composition having excellent pharmaceutical and health-preserving effects and, more precisely, to a Cordyceps sinensis-derived medicine-type and/or food-and-drink-type composition.

PRIOR ART

Vegetative wasps (plant worms) are microorganisms of Ascomycota Pyrenomycetes Clavicipitales Clavicipitaceae Cordyceps undergoing both a complete metamorphic phase and an incomplete metamorphic phase.

Their fruit bodies have been valued from ancient times as drugs marvelously effective for perennial youth and longevity or for nourishment and tonicity. The fruit bodies of vegetative wasps that have heretofore been considered extremely valuable as Chinese medicines are generally powdered and administered.

According to the present invention, the mycelia of particular vegetable wasps are cultivated and the thus-cultivated mycelia are extracted with hot water. The fact that the resulting extract from such mycelia has a

Fig. 1 shows the effect of a hot-water extract of the mycelia of Cordyceps sinensis MF-20008 on the contractile force of the right atrial muscle of a rat.

Fig. 2 shows the effect of a hot-water extract of the mycelia of Cordyceps sinensis MF-20008 on the inter-contraction interval of the right atrium of a rat.

Fig. 3 shows the ulcer index (cm) of the ulcer formed in the gastric glands of a rat, to which a hot-water extract of the mycelia of Cordyceps sinensis MF 20008 was administered.

Fig. 4-1 shows the intake of ^3H -thymidine in the primary culture hepatocytes of a rat; and Fig. 4-2 shows the intake of ^{14}C -valine in the same.

Fig. 5 shows the effect of a hot-water extract of the mycelia of Cordyceps sinensis MF-20008 for the inhibition of the gastric acid secretion in a rat.

To carry out the present invention, it is necessary to cultivate the mycelia of vegetative wasps of Cordyceps sinensis and to collect the thus-cultivated mycelia. All microorganisms of Cordyceps sinensis can be used in the present invention, and these will be referred to as the microorganisms of the invention. For example, Cordyceps sinensis MF-20008 is useful, and this strain has been deposited in the National Institute of Bioscience and Human-Technology of the Agency of Industrial Science and Technology under FERM BP-5149.

46 liters of the culture were centrifuged, and the mycelia thus separated were freeze-dried to obtain 323.6 g of dry mycelia. The dry mycelia were put into a stainless container, 7 liters of water were added thereto, and these were ground with a polytoron, then heated at from 90 to 95°C for 2 hours while stirring and extracted. After the extraction, the residual substances were removed by filtration, and the resulting filtrate was freeze-dried to obtain 130 g of a lightly yellow powder.

Production Example 2

In the same manner as in Production Example 1, 150 ml of M20Y2 medium was put into a 500-ml Erlenmeyer flask and sterilized by autoclaving, and 1 ml of freeze-dried Cordyceps sinensis MF-20008 was inoculated therein and cultivated by shaking culture at 25°C and 180 rpm for 5 days. This was used as a seed culture and cultivated in 150 liters of the following medium in the manner mentioned below.

150 liters of D medium (comprising 40.0 g of sucrose, 4.0 g of K_2HPO_4 , 0.5 g of asparagine, 2.0 g of $(NH_4)_2HPO_4$, 2.0 g of $MgSO_4 \cdot 7H_2O$, 0.25 g of $CaCO_3$, 0.1 g of $CaCl_2$ and 4.0 g of yeast extract B-2 in one liter and having pH of 5.6) was, after having been sterilized and filtered, put into a 150-liter fermenter, and 150 ml of the above-mentioned seed culture was inoculated therein.

and cultivated under a controlled condition at 25°C, pH of 5.5 and DO of 50% while stirring at 157 rpm, for 3 days. The foams formed during the cultivation were removed by adding a silicone de-foaming agent to the fermenter. 150 liter of the culture thus obtained was treated with a clarifier to thereby isolate the mycelia. Thus, an aqueous suspension of the mycelia was obtained. This was heated at from 90°C to 95°C for 2 hours and extracted. Then, this was clarified with a clarifier to isolate a supernatant. This was filtered through 0.45- μ m and 0.22- μ m sterile filters to obtain 80 liters of a lightly yellow hot-water extract (the dry weight of the solid content: 800 g).

Example 1

The cultivated mycelia (dry mycelia) of Cordyceps sinensis MF-20008 that had been prepared in Production Example 1 and the hot-water extract thereof (lightly yellow powder) were subjected to a swimming fatigue test with mice, to which these were orally administered.

The test animals were male ICR mice (5 to 7 week-age), and these were grouped into three groups and subjected to a fatigue test under the conditions mentioned below.

Administration:

The hot-water extract of the mycelia of Cordyceps sinensis MF-20008 or the mycelia themselves were mixed with powdery CRF-1 feed at a proportion of 2.5% or 5%, respectively, and the resulting powdery feed mix was administered to the mice all the time for 16 days.

Groups of mice: Each group was comprised of 20 mice.

- (1) Control group: Fed with only powdery CRF-1 feed.
- (2) Group to which the hot-water extract was administered: Fed with the feed mix containing 2.5 % of the hot-water extract.
- (3) Group to which the mycelia were administered: Fed with the feed mix containing 5% of the dry mycelia.

Test schedule:

On the 15th day after the start of the administration, the mice were subjected to a forcedly swimming test. On the 16th day, all the blood was collected from each mouse and subjected to whole blood analysis and serum analysis.

(2) On the 16th day after the start of the administration, the whole blood was collected from each mouse that had been subjected to the above-mentioned swimming fatigue test and analyzed in terms of the number of the platelets ($\times 10,000/\text{mm}^3$), the amount of hemoglobin (g/dl), the number of erythrocytes ($\times 10,000/\text{mm}^3$), the number of leucocytes (mm^3), and the hematocrit (%).

The results of the analysis of the whole blood are shown in Table 2 below. As is obvious from these results, there was admitted no significant difference between the test groups and the control group in all the test items, as the level of significance of the test was 5%. (To analyze the whole blood, used was a Student test. To count the number of the platelets in the third group, however, used was an Aspin-Welch test.)

No.	Third Group (Fed with Dry Mycelia of MF-20008)				
	Number of Platelets x 10000/mm ³	Amount of Hemoglobin g/dl	Number of Erythrocytes x 10000/mm ³	Number of Leucocytes /mm ³	Hematocrit %
1	88.3	10.7	835	7000	51
2	97.6	15.9	994	3200	56.3
3	103.6	15.3	916	3300	55.3
4	116	14.7	951	7000	56.7
5	155.7	15.5	936	7000	57.4
6	131.6	15.2	943	4100	56.6
7	119.3	16.6	1010	4700	59.3
8	130.9	16.2	991	5200	57.9
9	113.1	15.7	1026	7700	58.8
10	58.6	15.8	994	6400	57.4
Average	111.47	15.46	959.6	5560	56.67