

# ALIEN PROPERTY CUSTODIAN

## PREPARATION CONTAINING B-VITAMINS AND PROCESS FOR THE MANUFACTURE OF SAME

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This invention relates to preparations containing B-vitamins and has for its object a solid preparation rich in B-vitamins as well as a method for the manufacture of same.

An important feature of the solid vitamin preparation according to the present invention consists therein that it contains the B-vitamins intimately intermixed with a solid substance having the property of acting as an adsorption agent for B-vitamins and being at the same time of such a character as to exert no injurious action on the human organism.

An important feature of the method of manufacturing the vitamin-preparation according to the invention consists in the combination of the steps of adding an adsorption agent to a liquid containing the B-vitamins to bring about adsorption of the vitamins on the added adsorption agent, separating the liquid from the solid mixture of adsorption agent and adsorbed vitamins and removing sufficient liquid from the solid mixture to obtain an apparently dry substance in the form of a powder, granules, tablets or the like.

The use of adsorption agents (such as kieselguhr, Fullers earth or other infusorial earths, active carbon and the like) to separate B-vitamins from yeast extracts and other liquids containing the said vitamins is well known, but in the hitherto known methods this adsorption step has always been followed by an elution or lixiviation operation to separate the adsorbed matter from the adsorption agent, the solution being further treated separate from the adsorption agent to obtain the desired vitamin B concentrate.

In the process according to the present invention such elution or lixiviation is not resorted to, the adsorption agent with the adsorbed vitamins being directly converted into a commercial solid vitamin preparation, in which the adsorption agent enters as a necessary constituent.

By this method of proceeding several important advantages are attained. The entire procedure required to obtain vitamin preparations ready for sale is greatly simplified. The output of vitamins is great, because the losses involved by the lixiviation and subsequent operations are avoided. And it is by the present process possible by simple and inexpensive means to obtain preparations containing the entire vitamin-B-complex.

The solution of B-vitamins which is to be subjected to the treatment with adsorption agent may be produced from yeast by known methods, for example by extracting the yeast (which may be ordinary beer yeast or a baker's yeast) with water or aqueous solutions. The adsorption

agent may be some active earth, such as Frankonite or Fullers earth, active carbon or the like.

After the adsorption operation, the liquid may be separated from the adsorption agent with adsorbed matter by centrifugal treatment, filtration or other suitable treatment. The mass may thereupon be subjected to further dehydration by evaporation at low temperatures and may thereafter be shaped into granules, tablets or like bodies of suitable shape and size, with or without foreign additions. The final dehydration of the product may also, when desirable, be effected subsequent to the shaping operation. The product may also be marketed in the form of a more or less fine powder. The shaping of the product may be carried out in the conventional manner and by the aid of suitable binding agents, such as sugar or gelatine. The dried product into which such binding agent has been incorporated, may be shaped into tablets, containing a desired definite amount of vitamins.

The treatment of the initial solution with adsorption agent may be carried out in one or more stages. If the treatment is carried out in two or more stages, the resulting fractions of adsorption agent with adsorbed matter may be mixed, dried and further treated as a mixture. Or each fraction may be treated separately to obtain commercial preparations of different character. The solutions to be treated with adsorption agent may also be obtained from the original raw material (for instance beer yeast) in one, two or more stages under equal or differing conditions.

### Example I

5 kg. of beer yeast are introduced into 5 liters of water, to which has been added hydrochloric acid in a quantity sufficient to produce a degree of acidity corresponding to a pH value of 4-5. The mixture is boiled up or heated to ca. 90° C. for about one quarter of an hour, whereupon the liquid is subjected to centrifugal treatment. To the clear liquid Frankonite K. L. in a quantity of 100 gr. is added, and the suspension is stirred for about one hour. The adsorption agent (Frankonite) with adsorbed matter is then separated from the liquid by centrifugal treatment and thereupon dehydrated at 60-70° C. The mass containing the vitamin-B-complex intimately incorporated into the Frankonite is shaped into tablets in the conventional way by the aid of agglutinants and so as to obtain tablets containing a predetermined amount of the B-vitamin-complex.

*Example II*

500 kg. of ordinary press yeast are suspended in 100 liters of water and the suspension is heated as rapidly as possible to about 90° C. Hydrochloric or sulphuric acid is added in a quantity to produce a pH of 4-5. The yeast cell skins are separated from the solution by centrifugal treatment.

The cell skin residuum is mixed with a further quantity of water and the mixture heated to 90° C. So much hydrochloric or sulphuric acid is added that the liquid is adjusted at a pH of about 1. The liquid is then subjected to a centrifugal treatment to remove the cell skin residuum.

The extract first obtained having a pH of about 4-5 is stirred with 2-4 kg. of kieselguhr for 2-3 hours. The kieselguhr with adsorbed matter is thereupon separated from the liquid by centrifugal treatment and then dried under vacuum.

The second extract is also stirred with 2-3 kg. of kieselguhr for about 2-4 hours. The solids are thereupon separated from the liquid and dried.

The two fractions of kieselguhr with adsorbed

vitamins may be treated separately to obtain different grades of vitamin-B-preparations, or they may be mixed together to obtain the whole complex in the same preparation.

5 It has been found that by operating in stages as described in this example it is possible to attain a more complete recovery of all of the vitamin B factors in the raw material.

10 By additional treatment or treatments with adsorption agents in a liquid having a pH different from that of the first stage treatment, the remainder of the vitamin B factors in the raw material will become absorbed. By mixing the various fractions preparations can be obtained which  
15 contain the entire vitamin B complex.

20 In stead of treating each of the original extracts separately with adsorption agents, the extracts may be mixed and thereupon treated with adsorption agent in two or more stages at different pH values as described.

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