

## Note on Diastatic Preparations.

By WILLIS G. TUCKER, M. D., Ph. D.

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Reprinted from the ALBANY MEDICAL ANNALS of March, 1898.



For the ANNALS.

## NOTE ON DIASTATIC PREPARATIONS.

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Professor of Inorganic and Analytical Chemistry, Albany Medical College.

Having recently completed a series of tests of some of the medicinal preparations of malt and cod liver oil, which are now so largely prescribed as digestive aids in certain forms of faulty digestion, with consequent imperfect food assimilation, no less than for their direct value as nutrients, it has seemed to me that the results obtained were of sufficient interest to warrant their publication, with a brief statement of the method employed in determining the diastatic value of the articles examined. The samples tested were purchased by myself at drug stores in New York City, Troy and Albany early in January of the present year. Three preparations of the class referred to, which appear to be largely prescribed by physicians, were selected, and one sample of each, in an unbroken, full-sized package, was purchased in each of the localities named. For the purpose of record these were numbered 1, 2 and 3.

The value of the cod liver oil in such preparations is unquestioned, and there is little doubt that such articles, put up by reputable houses, contain the full amount of oil stated, as present, upon the label, and for this reason no determination of the amount of oil present in the samples was made, but the inquiry was restricted to a careful determination of the diastatic activity of the preparation, since this is likely to vary, and

upon this activity the remedial value of such articles largely depends. The method employed in making this determination was one which I had previously employed in similar work, and which has been found to yield very satisfactory and concordant comparative results.

Briefly stated, this method consists in adding to a definite quantity of gelatinized starch, carefully prepared from the best Bermuda arrowroot, and of three per cent. strength, contained in a glass flask, and at a temperature of 99-100° F., a weighed amount of the sample, and keeping the flask at this temperature for exactly half an hour. At the end of this time the further action of the diastase in the preparation upon the starch, which latter must necessarily be present in considerable excess, is checked by the addition of a solution of sodium hydroxid. The liquid is then diluted to a definite volume with distilled water, and the sugar produced by the transformation of the starch is determined as dextrose by Fehling's solution. The quantity of sugar originally present in each of the samples had previously been determined, and this amount was deducted from the total amount found in each case, and the remainder calculated as maltose, the reducing power of which was taken, as commonly, as two-thirds that of dextrose. Precisely the same method was employed in each determination, and the conditions were in all respects identical in all the tests.

The results may most readily be understood if stated in parts by weight of maltose, or its equivalent, in reducing sugars, produced by one part of each of the preparations examined, and these were found to be as follows in the three tests which were made of each article:

No. 1 = 4.42, 4.98, 4.24, the average being 4.54.

No. 2 = 1.66, 1.41, 1.32, average 1.46.

No. 3 = 0.52, 0.51, 0.54, average 0.52.

It is, I think, fair to state that the first of these preparations was Maltzyme with Cod Liver Oil, and that the results plainly indicate its diastatic activity. Such preparations as this have aptly been styled "digestive foods," and their value, as previously stated, in large measure depends upon the amounts of active diastase which they contain. For this enzyme, possessing the property of bringing the starch in food into a soluble condition and converting it into easily assimilable forms of dextrin and sugar, is a valuable aid to digestion in certain cases, and if its activity is unimpaired it is capable of exercising an important influence upon the digestive process when properly administered.







## ALBANY MEDICAL ANNALS

Journal of the Alumni Association of  
the Albany Medical College.

### EDITORS:

ANDREW MAC FARLANE, M. D.

J. MONTGOMERY MOSHER, M. D.

PUBLISHED MONTHLY.

Subscription Price, One Dollar Per Annum, in Advance.

The ALBANY MEDICAL ANNALS is published at Albany as the official organ of the Alumni Association of the Albany Medical College. It has the especial support of the Graduates, Faculty and Students of the College, is an exponent of all that is best in the past and present of the College, and is replete with the best work in medical science.

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