

A METHOD FOR PREPARATION OF LARGE QUANTITIES OF WHEAT GLUTEN

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This method for the extraction of gluten for use in animal experimentation work consists essentially of the regular mechanical method of extraction with special attention to its use for extraction of very large amounts of gluten.

The wheat is first ground to about the consistency of a No. 40 powder, that is, a powder all of which will easily pass through a No. 40 standard mesh sieve. It is then soaked in cold water for about an hour, and the resulting doughy mass of whole wheat is then placed on a screen or sieve. Cold water is allowed to run over the mass while it is kneaded. This process removes the major share of the bran, leaving a stringy ball of protein and bran. The remainder of the bran is then removed by immersing in cold water and kneading until practically all of the bran is washed out. A viscous mass of nearly pure gluten is obtained.

The gluten must then be allowed to stand in fairly warm water for about one-half hour. This step is essential in that it facilitates the rolling of the gluten into thin sheets. The water, however, must not be too hot since hot water causes coagulation of the protein. This soaking causes the protein to become one uniform mass, that is, it increases the viscosity of the gluten. Because of this increased viscosity, the mass can next be rolled into thin sheets, and hung on wire where it is allowed to dry. These sheets are an extremely convenient way of drying the gluten. Artificial heat may be used to hasten the drying process. The sheets are usually about one or two feet long and about six inches in width.

The dried gluten can then be ground to the desired fineness, and is ready for use.

This method has proved more satisfactory for the preparation of gluten to be used in animal experimentation than other methods of preparation. It has proved to have some

advantages over the chemical method of extraction for this purpose.

In the chemical method for the extraction of gluten difficulty is often encountered in that there is often an inversion of the amino acids of gluten, and when inversion of amino acids occurs, the protein cannot be used with expectation of accurate results in animal feeding, because the protein is then not in its original unaltered state. When the mechanical method is used no difficulties in regard to this inversion of amino acids are experienced.

When the chemical method of extraction is used, the gluten, before drying, is in a less viscous state, and it is not elastic, so it must be dried on metal plates, thus involving considerable care in drying and removing the dried product.

In this drying process by means of metal plates care must be taken to complete drying before bacterial decomposition takes place. Considerable difficulty due to bacterial action, has been encountered, in the drying of the protein extracted by the chemical method. The fermenting enzymes are in a more favorable environment in which to act, and fermentation very often takes place before the drying process is complete. Of course, this fermentation also alters the protein and is to be avoided in order to obtain accurate result in animal experimentation.

The mechanical method of extraction has not shown the above mentioned disadvantages and is, therefore, recommended because it has proved to be more practical as well as more economical and convenient than other methods used for extracting relatively pure gluten from wheat.