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HONEY AS A SOURCE OF MINERALS IN THE DIET

A radio talk by R. E. Lothrop, Carbohydrate Division, Bureau of Chemistry and Soils, delivered in the Department of Agriculture period of the National Farm and Home Hour Wednesday, November 13, 1935, and broadcast by NBC and a network of 50 associated radio stations.

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Since this is national honey week I feel quite certain that all of you producers of honey, and also those of you who enjoy eating honey, will be interested in the efforts being made to gain popular recognition of the value of honey as a food. Therefore, I want to tell you something about the minerals of honey that we have found out as a result of our chemical investigations.

While honey is primarily an energy food, consisting mostly of sugars, it does contribute definite quantities of other food elements to the diet. Among these are the mineral elements. When considering the minerals of a foodstuff from a dietary standpoint, it is important to take into account the quantity and nature of the various mineral elements supplied to the body by that foodstuff. Honey contains definite quantities of certain mineral elements which are important from a nutritional standpoint. Among these mineral elements might be mentioned phosphorus, calcium, potassium, magnesium, sulphur, and iron. The quantity of each of these mineral elements present varies considerably among the various floral types of honey, being somewhat greater as a rule for the dark-colored than for the light-colored varieties.

In addition to the question of the nature and quantity of mineral elements contributed to the diet by honey, we must consider the reaction of the minerals present since this also is a dietary factor. By reaction is meant whether the minerals are predominantly acidic or predominantly alkaline in nature. The classification of foods as acid foods or alkaline foods is dependent almost altogether on the nature of the mineral elements present. Oranges, lemons, and fruits in general are quite acid to the taste, but as foods they are potentially alkaline. Like them, honey is also slightly acid to the taste, but as a food is potentially alkaline. This might seem somewhat paradoxical at first, but it is quite simple to understand if we consider what takes place when foods undergo digestion and metabolism in the body. Certain foods, such as oranges, lemons, and even honey, are sour or acid to the taste because they contain organic acids such as citric, malic and others. Now these acids, along with sugars and starches present in foods, are very largely burned up in the body during digestion and metabolism. These acids, therefore, do not play a part in the acid-alkaline balance of the body. The reaction of the food then is dependent almost altogether on the mineral elements present.

Foods vary widely as potential sources of acid or alkaline products in metabolism. In general, meats, fish, eggs, bread, wheat, and the cereals contain a preponderance of acid-forming elements. Fruits, vegetables and milk on the other hand contain a preponderance of alkaline-forming elements. The mineral content of commercial fats, sugars and starches is too low for it to have any significant effect from this standpoint.

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There is no general agreement among food authorities as to how important the acid-alkaline balance of the diet is. Some feel that the importance of maintaining somewhere near a balance between acid-forming and alkaline-forming foods, or of maintaining an alkaline balance in the diet is greatly overstressed. On the other hand, there is abundant evidence to support the view that this matter is of considerable importance.

No work has been done previous to the present investigation relative to determining the acid-alkaline balance of honey as a food. Most food authorities have considered that the mineral content of honey is too small to be of any appreciable importance in the diet. As to whether or not this view is justified is open to some question.

In order to obtain some definite information on various types of American honeys from this standpoint, an investigation was carried out by the Bureau of Chemistry and Soils of the U. S. Department of Agriculture, utilizing the more representative types of American honeys. The acid-alkaline balance of each honey was determined by prescribed chemical methods. All of the honeys tested in this manner gave definite alkaline values. With few exceptions values were greater for the darker colored honeys than for light honeys, due to the higher mineral content of the darker honeys.

In consideration of the somewhat low mineral content of honeys in general, it might be interesting to note that alkaline values for some of the honeys studied compare favorably with alkaline values for fruits and vegetables. For instance, the average alkaline value of all honeys studied was 1.5, with a range of about 0.3 for the lowest to slightly over 4.5 for the highest. This compares with some typically alkaline foods, such as apples, which have a value of 3.7, asparagus 0.8, lemons 5.0, mushrooms 4.0, orange juice 4.5, potatoes 7.0, pumpkin 1.5, tomatoes 5.6, peas 3.6, and turnips 2.7.

In conclusion, I might say that if the question of maintaining the proper acid-alkaline balance in the diet is important, as many food authorities believe, then definite significance can be attached to the reaction of the minerals of honey from this standpoint. In addition, of course, honey contributes definite quantities of certain important mineral elements to the diet.

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