IODINE IN OKLAHOMA VEGETABLES

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The need of iodine in the metabolism of man, domestic animals and plants, its distribution in nature, and the various methods of determination, have been frequently reviewed in the literature. An excellent summary has been prepared by V. A. Pease, Food Research Division, Bureau of Chemistry and Soil, United States Department of Agriculture. From the accumulation of such data certain facts may be briefly mentioned as instigating this investigation. It has been very definitely proven that while iodine is almost universally found in all matter and in most places on the earth's surface, there is a very great variation in the quantity. It has also been demonstrated that plants have different powers of assimilation of iodine, and the same plant will contain different percentages depending upon the soil content. Certain spots on the earth's surface have been shown to be very deficient in iodine while the vegetables from other limited areas, notably along the Atlantic seaboard, have been found to be a rich source. Oklahoma was undoubtedly once submerged and it has many saline waters, for this reason vegetable growers of this state have requested that a study of our vegetation be made.

Common vegetables gathered during the summers of 1933 and 1934, from various sections of Oklahoma, were washed, dried in vacuum driers, ground, and stored. During the winter months these samples have been analyzed by a modification of the Remington, and Karns methods. Due to the lower percentages of iodine present, large quantities of the dried sample must be burned. The burning cannot be carried out by any of the ordinary methods, due to the fact that iodine would volatilize and be lost. To oversome this difficulty the flour is packed in cellophane sausage casings, and by means of a mechanical arrangement, fed into a closed container where it is burned in an oxygen blast. The fumes are conducted into, and absorbed by an alkaline solution in a train of special Friederich wash flasks. The movement is kept constant by a suction provided by a small electric air pump. After completing the combustion the ashes from the torch are mixed with the alkaline wash waters from the absorption bottles and evaporated to dryness then heated at 400° C. for forty-eight hours. The iodine of the residue is estimated by the Remington method with the exception that carbon disulphide is used as a solvent and a standard containing a known weight of iodine is prepared each time. The standard being carried through simultaneously with the iodine samples as suggested by McHargue.

Analyses of many samples of a large variety of vegetables grown in various sections of Oklahoma have been completed. The quantity of iodine found in Oklahoma vegetables equals and in some cases, surpasses those reported for Carolina vegetables. The iodine seems to be more concentrated in those parts of the plant in which the green color is more intense. The quantity in the leaves surpasses that of the stems, while that found in the stems is greater, as a rule, than the amount present in the roots or tubers.

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