10 Composition and Nutritional Characteristics of Oat Grain and Products

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This chapter is concerned with the composition of oat (*Avena sativa* L.) grain and its products and their nutritional importance in the human diet. The majority of the oat crop is used for animal feed, but an increasing proportion is going into products for human consumption in recognition of the value of oat as part of a healthful, balanced diet. The nutritional value of oat for ruminant and nonruminant livestock is covered in chapter 8 (by Schrickel et al.) in this book. Nutritional experiments with animals as model systems, however, and human studies will be discussed in this chapter.

Oat, like the other cereals, is valued primarily as a source of carbohydrate to provide calories to meet our energy needs. Because of a higher concentration of well-balanced protein than other cereals, oat has greater potential value to provide a substantial proportion of protein requirements, especially in some parts of the world where the diet is primarily of plant origin. Oat also contains several essential vitamins, minerals, and fatty acids. In recent years, the value of oat as a source of soluble fiber has been recognized. Oat has low concentrations of antinutritional compounds.

Like any other food product, oat should be considered as part of a total diet. When consumed along with a variety of other foods from the four food groups, oat can be a valuable dietary component. If consumed alone, or as the major portion of dietary calories, deficiencies are likely to occur.

In the USA and certain other developed countries, nutritional problems relate less to deficiencies and more to overeating and dietary imbalances. Guidelines for healthy diets recommend increasing dietary fiber and complex carbohydrate while decreasing the consumption of refined sugar, animal fat, and cholesterol. An increased use of cereal-based foods, such as oat, is in accord with these guidelines.

This chapter is organized by constituent groups, and under each subheading the composition, microchemical distribution, and nutritional considerations will be discussed. It is beyond the scope of this chapter to cover...