7 Bread and baker’s yeast

I. JENSON

7.1 Introduction

Bread has been produced by man for thousands of years and is one of few foods common to many societies. The basic concepts of bread and breadmaking have been modified to suit the prevailing quality of raw materials, the culinary habits and the nature of the society in which it is consumed. Bread and its availability has been fundamental to the political stability of many countries and a sign of prosperity in many cultures. Despite its long history, bread continues to endure and is considered as a staple food in many countries.

Bread is a common food over a very wide geographical area. It is eaten almost everywhere that cereals are available and is now being consumed more commonly in regions, such as in South East Asia, that have not been traditional bread consumers. Bread types may be defined based on the constituents of the bread, the shape, or a particular market the bread is aiming to satisfy. The European market provides an example of the range of products that may be found and differing levels of manufacturing sophistication. Most bread is made from wheat, although in northern Europe and Germany bread containing rye is common. In the Latin countries such as Italy, France and Spain, white bread, as baguettes, makes up almost the entire market (Euromonitor, 1993). Within each country there is also a wide range of breads consumed locally or only at certain times of the year, such as German stollen that is consumed only around Christmas time. Yeast-raised flour-based products also include simple flat forms such as Mexican tortillas, Arabic pitta, pizza bases or Scandinavian flatbread, Chinese steamed bread (Faridi, 1988) and a range of sweetgoods such as Danish pastries, croissants and doughnuts (Matz, 1989).

The production of bread occurs at differing levels of sophistication from simple earthenware pots and ovens to large computer-controlled industrial bakeries. Thus, a single geographical area may have a range of products produced with varying levels of sophistication. Different manufacturing processes may be more commonly encountered in some countries than others. In Great Britain, 78% of bread is produced in plant bakeries (Anon., 1995a). Some plant bakeries can produce several thousand loaves each hour. Small-scale bakeries in which bread is made and sold on the premises dominate the market in many countries. An example is Italy,
where 75% of products are produced by small retail (craft) bakeries (Anon., 1995b).

The baking of bread on a large scale in societies demanding high rates of productivity has created an industry to produce yeast for breadmaking. The producers of baker's yeast align themselves strongly with the food industry, despite being part of the fermentation industry in technology and many are almost solely devoted to producing the yeast necessary for breadmaking. The yeast industry has been estimated to produce approximately 430,000 tonnes of baker's yeast (on a dry weight basis) per annum (Nagodawithana & Trivedi, 1990).

Yeast production is tailored to meet the requirements of the market into which it is sold. The activity characteristics of the yeast are chosen to suit the method of breadmaking employed and the packaging and distribution suit the physical arrangements of the bakery industry. Since this is the case, this review will discuss the breadmaking process and the role of yeast before examining the production of yeast to meet these requirements.

7.1.1 Historical

The origin of bread predates recorded history, with suggestions that bread was baked in Egypt as early as 10,000 BC (Wood, 1989). Certainly, carvings of bakery scenes in the ruins of Memphis have been dated at 3000 BC (Nagodawithana & Trivedi, 1990). The Egyptians are known to have purpose-built bakeries dated at c. 2470 BC to supply the labourers building the pyramids with their daily bread. This bread was made from emmer, an ancient wheat variety, and apparently with yeast maintained for that purpose. The bread was baked in large clay pots. Several attempts have been made to reproduce this bread in modern times, using ground emmer, spontaneously fermenting dough as a source of yeast and pots reproduced from those found during archaeological excavations (Highfield, 1995; Roberts, 1995). Ancient baking would have invariably been with sourdough cultures, containing both yeast and lactic acid bacteria (Wood, 1989).

In medieval England, where bread was an established staple, strict regulations existed to control the price and quality of bread. Various types of bread were produced from different grades of flour, such that everyone was able to buy bread of some description. Some ale yeast was sold to bakers and the price of yeast was controlled also (Hammond, 1995).

The use of sourdough cultures, by maintaining part of one day's production for use on a subsequent occasion, continued until the 19th century. This practice can still be found today even in countries where industrial bread production is the norm (Wood, 1989). The industrial production of baker's yeast began during the 19th century. Yeast for baking was often obtained from breweries and distilleries, but as the population of industrial centres grew the increased demand for baker's yeast resulted in attempts to in-