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Metabolism Overall and Its Context

INTRODUCTION

The term unity of biochemistry means that all life has a common origin and that metabolic pathways and their rules are widely shared. Thus, much of the layout of central intermediary metabolism depicted in Figure 1-1 (Fraenkel 1982), although shown for yeast, would apply also to bacteria and plants and humans. The best-known eukaryotic unicellular microbe is the yeast *Saccharomyces cerevisiae*, used in baking and in the alcoholic fermentation of wine and beer. The word “yeast” itself, from the Greek *zestos* (for boiled), is based on a characteristic feature of its metabolism, the forming of carbon dioxide during fermentation (Phaff et al. 1978). Likewise, the French (*levure*) and German (*hefe*) words for yeast both mean “to raise,” which is what the carbon dioxide does to dough. The immediate steps of making carbon dioxide and ethanol from glucose are indicated by just two reactions in Figure 1-1, pyruvate to acetaldehyde and acetaldehyde to ethanol, of which the first happens not to be universal.

The first section of this chapter describes the general features of yeast metabolism in the framework of Figure 1-1, as illustrated by the growth of *S. cerevisiae* under three different conditions. More didactic issues follow in the second section on classification and the place of *S. cerevisiae* among yeasts, the third section on composition, and the fourth section on nutrition.