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# Wines from fruits other than grapes: Current status and future prospectus



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## ABSTRACT

Several tropical, subtropical and temperate fruits although they differ in shape, colour, taste and nutritive values, provide numerous health benefits. Some of the edible fruits ripen within a very short period, usually leading to an overabundance of the fruits when harvested. Many of the fruits are consumed fresh, but large quantities of harvested fruits are wasted during peak harvest periods, due to the high temperature and humidity, poor handling, poor storage facilities and microbial infections. Therefore, winemaking from such ripe fruits or their juices is considered as an alternative of utilizing surplus and over-ripe fruits for generating additional revenues for the fruit growers. This review summarizes current knowledge about the usage of fruits other than grapes for winemaking and elaborates their properties; mainly quality, consumption, nutrition, sensory evaluation and health benefits. Hence, production and commercialization of non-grape fruit wines is the basis for the standardization of technologies for reducing post-harvest losses and contributes to the economy of the existing wine industry.

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## 1. Introduction

Winemaking is one of the most ancient of man's technologies, and is now one of the most commercially prosperous biotechnological processes (Moreno-Arribas & Polo, 2005). The technique of winemaking is known since the dawn of civilization and has followed human and agricultural progress (Chambers & Pretorius, 2010). The earliest biomolecular archaeological evidence for plant additives in fermented beverages dates from the early Neolithic period in China and the Middle East, when the first plants and animals were domesticated and provided the basis for a complex society and permanent settlements (McGovern, Mirzoiian, & Hall, 2009). In ancient China, fermented beverages were routinely produced from rice, millet and fruits (McGovern et al., 2004). However, in earlier years in Egypt, a range of natural products specifically; herbs and tree resins were served with grape wine to prepare herbal medicinal wines (McGovern et al., 2009). Many of the polyphenols and other bioactive compounds in the source materials are bonded to insoluble plant compounds. The winemaking process releases many of these bioactive components into aqueous ethanolic solution, thus making them more biologically available for absorption during consumption (Shahidi, 2009). Wine is a distinctive product that influences major life events, from birth to death, victories, auspicious occasions, harvest and other events, due to its analgesic, disinfectant, and profound mind-altering effects (Bisson, Waterhouse, Ebeler, Walker, & Lapsley, 2002; McGovern et al., 2004). Fruits produced by many indigenous trees are edible and can ripen within a very short span of time, generating surplus production. Many of these are consumed fresh, but large quantities are wasted during peak harvest periods, due to high temperature, humidity fluctuations, improper handling, inadequate storage facilities, inconvenient transport and microbial infections. The food industry

uses a variety of preservation and processing, methods to extend the shelf life of fruits and vegetables such that they can be consumed year round, and transported safely to consumers all over the world, not only those living near the growing region (Barret & Lloyd, 2012). Therefore, utilization of ripe fruits or their juices for wines production is considered to be an attractive means of utilizing surplus and over-ripen fruits. Moreover, fermentation helps to preserve and enhance the nutritional value of foods and beverages. The research underway currently is to assess the potential of fruit species which have been explored by the food industries to meet the growing needs of the ever increasing consumer market for several fruits by-products including wines. In this context, fermentation steps aim to achieve the following:

- Preservation by means of acidification/alcohol production
- Alteration of chemical nature and sensory properties of fruit
- Improvement in efficacy of some bioactive constituents
- Enhancement of nutritional value of foods and beverages
- Increase in consumption and export of processed fruit products
- Attribution to better transportation and distribution system
- To reduce post-harvest and production losses
- To generate more profits
- Improved cultivation and commercialization
- Promote sustainable use of biomes

A wide variety of analytical techniques have been standardized for characterizing various foodstuffs mainly wine, honey, tea, olive oil and juices (Table 2). Simultaneously, consumer preferences for wine selection depend on several properties such as pleasant colour, taste, aroma, ecological

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