

Rare fruits as a source of nutrient rich fermented products

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An experiment was conducted at MGM College of Agricultural Biotechnology, Aurangabad. The fruits such as banana custard apple, papaya, date are processed for fermentation. Fruits are fermented anaerobically by utilizing sugars in fruits with the help of yeast *Saccharomyces cerevisiae*. The fermented products are distilled at 60° and percentage of the alcohol is determined by calculating specific gravity of the distillate. The values alcohol percentage of the distillate prepared from banana, papaya, custard apple, dates are 8.2, 8.1, 8.2, 8.1, 8.1, and 8.2, respectively which are within the range of the values of alcohol percentage of the fruit wines (8% to 13 %) This indicates that using the same species of yeast *i.e.* *Saccharomyces cerevisiae* and same processing conditions various dry white wines of different aroma can be prepared from fruits other than grapes.

In this experiment normal alcoholic fermentation of sound fermentable agricultural products, either fresh or dried or of stored or unstored with the addition of water before or during the fermentation is carried out to correct natural moisture deficiencies (Industrial microbiology by Agrawal and parihar) Although grapes are by far the most often used fruit, various other fruits such as banana, papaya, custard apple, dates can also be used to make wines. Fermentation is the process by which a microorganism (yeast) converts sugar into alcohol and carbon dioxide gas. The dried yeast cells must reabsorb all their water the cells literally act like dried sponges and suck up the needed water in seconds. (water uptake.) Not only will yeast cells not disperse very well if not rehydrated, they can lose a large amount of cytoplasm, reducing the efficiency of oxygen and nutrient transfer to the cells. This impedes growth and activity causing sluggish or stuck fermentation. Proper rehydration can ensure healthy yeast cells and good fermentation characteristics (<http://www.lallemand.com/danstar-lalvin/lalvinrehyd.html>; <http://www.lallemand.com/danstar-lalvin/inferment/claytonHints.html>; <http://winemaking.jackeller.net/yeast.asp>; <http://home.att.net/lumeisenman/chapt12.html>)

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Wine and beer can be made from any plant material that contains free sugar but, we generally equate a nutrient as anything that wine yeasts need in order to survive, ranging from food, vitamins, and chemicals to the air and everything in between wine with grapes and these fruits and beer/whisky with grains. When actively dry wine yeast is made in the laboratory, one should remove excess water both inside the cell and outside effectively putting the yeast in a desiccated hibernation state until we are ready to use it. Yeast is a unicellular fungus which reproduces asexually by budding or division especially the genus *Saccharomyces* which is important in food fermentations. (Walker, 1988) *Saccharomyces cerevisiae* genus are the most common yeasts in fermented foods and beverages based on fruits and vegetables. All strains of this species ferment glucose and many ferment other plant derived carbohydrates such as sucrose, maltose and raffinose. There are several variables which can affect the fermentation process and final quality of wine. Temperature has an impact on the growth and activity of different strains of yeast. A temperature of 10° to 15° the non *Saccharomyces* species have an increased tolerance to alcohol and therefore, have the potential to contribute to the fermentation. Wines produced from grapes grown in colder climates tend to have a higher concentration of malic acid and a lower pH (3.0 to 3.5) and the test benefits from the slight decreases in acidity. The benefits of this process is that it imparts flavors and aromas to the wine. (Santon R.W. (1985) Food fermentations in the tropics in "Microbiology of fermented food", edited by Wood, B.J.B. Elsevier Applied science Publishers, UK), (Ashe, Arthur J. III "Fermentation" World Book Encyclopedia, 1999). ("fermentation" 11-14-01 <http://pasture.ecn.edu.purdue.edu/~agen5561/bread/html/fermentation.html>).

For making wine successfully along with the substrate, other factors should also be considered such as temperature pH Sugar concentration, of the fruits etc. Any yeast which is capable of fermenting sugar will