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Production of Herbal Wine

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ABSTRACT

Herbal wine is prepared either by a single herb or by adding a mixture of multiple herbs. The herbal wine has many health benefits. The present study aimed to make an herbal wine with ginger and lemon. The strain of Saccharomyces cerevisiae was isolated from natural sources and used as a fermenting organism. Herbal wines of various combinations as ginger + lemon + jeshthamadh, ginger + lemon + rock sugar and ginger + lemon + honey were produced and subjected to their physicochemical analysis. All the wine samples were found to be having sweet smell, and a sweet-sour taste. The color of the wine sample was brownish pink. The pH of the wine sample was found to be in the range of 6.1 to 6.8 and the alcohol percentage was found to be in the range of 9.93% to 11.04%. The wine produced with the combination of ginger + lemon + honey showed the highest alcohol percentage. A further optimization study should be carried out for winemaking.

Key words: *Herbal wine, Saccharomyces cerevisiae, ginger, lemon.*

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INTRODUCTION

Before the revolution in medicinal area and rise of modern medicines, people were treated using herbal formulations that were derived from plants [6]. Herbs have many positive effects on health of human beings. Many well-known herbal plants have been demonstrated to possess strong anti- bacterial, anti-inflammatory, anti- tumor and immune stimulatory properties. They have been utilised extensively in the preparation of health drinks [1]. Herbal wine serves as an excellent vehicle for extracting some of the beneficial components of plants because of the solvent properties of its alcohol paired with the acidity that typically characterizes wines of a particular terroir. Many wines are made from herbs with perceived medicinal value and such wines have many additional health benefits. The most important of these bioactive constituents of herbs present in the wine are alkaloids, tannins, flavonoids, saponins and phenolic compounds [2]. Herbal wine prepared with incorporation of herbs possesses many health benefits. Herbs have natural anti-bacterial constituents. Most of the herbs have anti-cancerous, anti-diabetic, anti-microbial and anti-inflammatory properties [4]. Wine gives the relaxation to body organs necessary for the metabolic activities like digestion and absorption of human diet [5].

MATERIALS AND METHODS [4]

The Yeast Culture

Saccharomyces cerevisiae was isolated from ginger peel by employing enrichment culture technique where the ginger peels and spoiled pomegranate grains were added in the 100mL sterile Sabouraud's broth and incubated on shaker at 175rpm for 24-h.The loopful of enriched culture was streaked on the Sabouraud's agar and plates were incubated at 28^0C for 48-72-h.The well isolated, convex, smooth and typical curd like smelling colony was selected, observed for typical budding yeast cell, the characteristics of *Saccharomyces cerevisiae*. The isolate was subjected to characterization with respect to its cultural and morphological characteristics with respect to colony characteristics and cell morphology with reference to [6].

Inoculum Preparation

The yeast isolate was inoculated in 300mL sterile Sabouraud's broth in 500mL capacity flask and incubated on shaker at 175 rpm for 24-h to get fresh and luxuriant biomass of yeast.

Preparation of Fermentation Medium

Fresh disease-free ginger (100-g), lemons (10 in number) were selected for the production of wine. Ginger was peeled and blended to obtain juice. The lemon juice was extracted by squeezing the lemons. The juices were filtered through muslin cloth and diluted to 600 mL with sterile distilled water to prepare

"Must". For removing most of spoilage causing and pathogenic microbes, the must was heated at 68°C for 25 min., then it wascooled at freezing temperature. The 3 g/100mL ammonium sulphate was added to must to adjust nitrogen content. 600 mL must was distributed in three 1000 mL bottles, labeled as 1, 2 and 3. All the bottles were added with 0.5% cinnamon powder.

In bottle 1, sugar was added with 5% licorice powder. **In bottle 2**, 5% rock sugar and in **bottle 3**, 5% honey was added. The 50 mL yeast inoculum was added in each bottle. The flasks were incubated at 28°C for 48-hwith intermittent shaking. After 48 h, flasks were kept for incubation at 25°C for 7 days. After 7 days of fermentation, the herbal wine was studied for its physicochemical properties. The wine was decanted in sterile flask and stored for aging.

RESULTS AND DISCUSSION

The isolated colonies were studied for colony characterization as shown in Table 1. Form the observed characters, the isolate was tentatively confirmed as *Saccharomyces cerevisiae*. The physicochemical properties of juice prior to fermentation are listed in Table 2 while the properties after the fermentation are listed in Table 3 and 4.

The typical morphological features of yeast showed that it was *Saccharomyces cerevisiae* (Table-1).It is evident from the Table-2 the ginger, lemon had pH of 5.6 and 3,0, respectively, while mixed juice of both had pH of 4.5 which is desired pH for yeast fermentation. The colours of ginger and lemon juice were light pink and white, respectively, of mixed juice it was white to straw coloured.

The Table-3 indicates that the sugar contents of three different fermentation i.e.**one** Ginger + Lemon + Rock sugar, **two** Ginger + Lemon + Licorice powder and **three** Ginger + Lemon + Honey, were 12,11 and 12% respectively before fermentation while after fermentation it were 8, 7 and 9 %,respectively.

The physic chemical characteristics of final wine product are presented in Table-4.It was found that all three wines showed desired properties. had sweet smell and odour, sweet sour to sour taste, pink to pinkish brown colour, 6.1-6.8 pH, 7-9% sugar and 6.86-7.04 % alcohol content.

Table 1: Colony Characters of the Yeast Isolate

Size	Shape	Consistency	Colour	Elevation	Opacity
1 mm	Round	Smooth	White	convex	Opaque

Table 2: Physicochemical Characters of Raw Juice

Fruit juice used	pH of juice	Color of juice
Ginger	5.6	Light pink
Lemon	3.0	White
Mix juice	4.5	White to straw

Table 3: Sugar content of Juice before and after Fermentation

Juice-mix(fermentation medium constituents)	Sugar content before fermentation (%)	Sugar content after fermentation (%)
Ginger + Lemon + Rock sugar	12	8
Ginger + Lemon + Licorice powder	11	7
Ginger + Lemon + Honey	12	9

Table 4: Physicochemical Characters of Wine

Test	Ginger + Lemon + Rock sugar	Ginger + Lemon + Licorice powder	Ginger + Lemon + Honey
Smell	Sweet	Sweet	Sweet
Taste	Sweet sour	Sour	Sweet sour
Odour	Sweet	Sweet	Sweet
Colour	Pink	Brown	Pink brown
pH	6.1	6.5	6.8
Sugar content	8 %	7 %	9 %
Alcohol percentage	6.93	6.86	7.04

CONCLUSION

The ginger and lemon blended herbal wine can be prepared with all desired qualities of wine and using the *Saccharomyces cerevisiae isolate.* Such soft drinks products have wide market.

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