

Study on cost of production for value added herbal wine from *Hibiscus rosa-sinensis* by using different strains of *Saccharomyces cerevisiae*

Snehlata Tiwari¹, Sangeeta Shukla², Kaushal Kishor³

¹ Senior Executive, Sunfresh agro industries Pvt. Ltd. Shrirampur, Maharashtra, India

² Assistant Professor, Warner College of Dairy Technology, Sam Higginbottom University of Agriculture Technology and Sciences, Allahabad, Uttar Pradesh, India

³ Assistant Professor, G.S. Degree College, Allahabad State University, Allahabad, Uttar Pradesh, India

Abstract

The study was undertaken with the objective of the estimated cost of herbal wine from Hibiscus Rosa-Sinensis by using a different strain of Saccharomyces prepared by Hibiscus powder, sugar, kms, di-ammonium phosphate, and different strain MTCC178, MTCC180, MTCC786. A total three replication for experimental all the standard ingredient was purchased from the local market the result of the study were revealed that the production of cost of controlled herbal wine was lower (274/lit) compared to all herbal wine Rs. (284/lit.). Which may be attributed to higher herbal wine.

Keywords: herbal wine, hibiscus petal powder, sugar, strain and cost of production

1. Introduction

The consumption of a variety of local herbs and vegetables by man is believed to contribute significantly to the improvement of human health, in terms of prevention or cure of diseases because plants have long served as a useful and rational source of therapeutic agents. Alcoholic beverages have been consumed by humans since the Neolithic era; the earliest evidence of alcohol was discovered in Jiahu, dating from 7000–6600 BC. The production and consumption of alcohol occurs in most cultures of the world, from hunter-gatherer peoples to nation-states. Till recently, it was perceived that regular consumption of alcoholic drinks is the main reason for several health problems and reduced life-span. However, it has been proved now through various studies that moderate consumption of alcoholic drinks especially wines have better effect on health. Wine, an alcoholic drink is widely accepted, consumed, and preferred due to its nutritive and healthful properties. To enhance the basic qualities of wine, it can be fortified with certain additives that are potentially beneficial to health. Making use of such additives, the wine was fortified, with an aim to further increase the therapeutic applications of wine. For this fortification, extracts from some herbs having high medicinal values were used. Herbs, such as Holy-basil, Hibiscus petals, Lemon-grass, Peppermint and Ginger were chosen for fortification of wine which are known for therapeutic and medicinal applications. These Herbal extracts impart the similar properties to the fortified wines and hence, consumption of such fortified wines would give tremendous health benefits than regular wines. The *Hibiscus rosa-sinensis* belongs to the family Malvaceae. Traditionally flower can be used as anti asthmatic agents. Many chemical constitute such as cyanidin, quercetin, hentriacontane, calcium oxalate, thiamin, riboflavin, niacin, and antimicrobial substances are present in this flower

(Zhao J, 2010). The petal have some protective mechanism against microbial attack in most of the parts. The *H. Rosa-sinensis* flower petal of large number of plant species growing in the vicinity of our environment were screened for their antimicrobial activity. The antioxidant properties of flavonoids, polyphenolic Compounds and anthocyanins contained in the flower can prevent the oxidation of Low-Density Lipoproteins (LDL), which is associated with the disease. The characterization of wine yeasts of different species for by-product formation has underlined that the yeast species itself is a prominent factor in determining the wine composition (Houtman *et al.*, 1980; Benda, 1982; Herraiz *et al.*, 1990; Romano, 1997; Brandolini *et al.*, 2002).

Material and methods

The present study entitled "Cost of Production for Value Added Herbal Wine "was conducted in the research laboratory of Warner College of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad. The material and methods were adopted during this investigation are given below

- Hibiscus rosa-sinensis flowers were collected from Agronomy department of SHUATS, Allahabad.
- Sugar, KMS, Di-ammonium phosphate were purchased from local market of Allahabad.
- Different types of Saccharomyces cerevisiae strains MTCC 786, MTCC 178, MTCC 180 were collected from IMTECH, Chandigarh, India.

Result and Discussion

The costs of the ingredients are very important factor besides other factors in determining the cost of production. It is considered as basis for price fixation and determines the profit. The price of the product is depending on the cost of the production. The cost of experimental Herbal Wine was calculated, which is shown in the table below.

Table 1

Treatment	Hibiscus Powder	Sugar	KMS	Di-ammonium phosphate	Strains	Glass bottle	Overhead Rs. /ml	Yield	Total cost Rs. /lit
Rate Rs. /lit	180	40	110	310	3000	10	20		
178	239	3.04	0.18	0.514	0.99	10	20	300	274
180	244.06	3.11	0.18	0.52	0.99	10	20	295	278.86
786	249.12	3.18	0.19	0.53	1.02	10	20	273	284.04

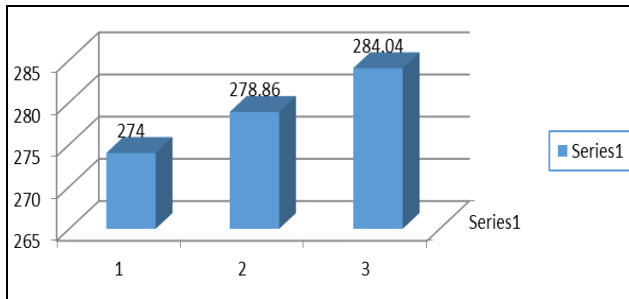


Fig 1

1*- 178 (Treatment-1)

2*- 180 (Treatment-2)

3*- 786 (Treatment-3)

Conclusion

Herbal Wine production sounds common but the novelty of this work is the use of Hibiscus flower and juice which is fermented using a different yeast strains of *Saccharomyces cerevisiae* purchased from IMTECH Chandigarh for wine production. The sensory evaluation has indicated that the wine possesses novel characteristics in aroma and taste and good acceptability. Amongst the three yeast strain screened for alcoholic fermentation of reconstituted *Hibiscus* petals extract, *Saccharomyces cerevisiae* MTCC 178 was found most potent strain and the result of the study were revealed that the production of cost of controlled herbal wine was lower (274/lit) compared to other two herbal wine Rs. (284.04 /lit.).

Acknowledgement

The author would like to thank advisor (Dr.) sangeeta shukla Assistant Professor (Head Dairy Microbiology) WCDT, SHUATS, Allahabad, for providing proper guidance and all required facilities.

References

1. Aloba AP, Offonry SU. Characteristics of Coloured Wine Produced from Roselle (*Hibiscus sabdariffa*) Calyx Extract. *Journal of Institute of Brewing*. 2009; 115(2):91-94.
2. Ameh AO, Isa MT, Ahmed AS, Adamu SB. Studies on the use of frona in improving the taste of the extract from *Hibiscus sabdariffa* calyx. *Nigeria Journal of Pharmaceutical Science*. 2009; 8(1):7-12.
3. Boban N, Tonkic M, Modun D, Budimir D, Mudnic I, Sutlovic D, *et al.* Thermally treated wine retains antibacterial effects to food-borne pathogens. *Food Control*. 2010; 21:1161-1165.
4. Cao G, Sofic E, Prior RL. Antioxidant capacity and prooxidant behavior of flavonoids: Structure activity relationships. *Free Radical Bio. Med.* 1997; 22:749-760.
5. Fotakis C, Christodouleas D, Zervou M, Papadopoulos K, Calokerinosa AC. Classification of wines based on

different antioxidant responses to spectrophotometric analytical. *Analytical Letters*. 2012; 45:581-591.

6. Krishnaiah D, Devi T, Bano A, Sarbatly R. Studies on phytochemical constituents of six Malaysian medicinal plants. *Journal of Medicinal Plants Research*. 2009; 3:67-72.
7. Naissides M, Pal S, James AP, Mamo JC. The effect of red wine polyphenols on cardiovascular disease risk in postmenopausal women. *Asia Pacific J Clin Nutr*. 2004; 13:71-5.
8. Soleas GJ, Diamandis EP, Goldberg DM. Wine as a biological fluid: history, production and role in disease prevention. *J Clin Lab Anal*. 1997; 11:287-313.
9. Tiwari S, Shukla S, Kishor K. 2017 Production, optimization, characterization and evaluation of antimicrobial activities in *Hibiscus rosasinensis* wine *Journal of Pharmacognosy and Phytochemistry*. 2017; 6(3):19-26.
10. Tiwari S, Shukla S, Morya S, Kishor K. Production of Herbal Wine from *Hibiscus rosa-sinensis* by Using Different Strains of *Saccharomyces cerevisiae* 9434 *Advances in Life Sciences* 5(20), Print: ISSN 2278 Advances-3849, 9434 in Life 9437, Sciences 2016; 5:20.
11. Tiwari S, Shukla S, Kishor K. Estimation of Antioxidant activity by Spectrophotometric Method in Herbal wine prepared from *Hibiscus rosa-sinensis* *Trends in Biosciences*. 2017; 10:1.
12. Vilanova M, Masneuf-Pomarede I, Dobourdieu D. Influence of *Saccharomyces cerevisiae* strains on general composition and sensorial properties of white wines made from *Vitis vinifera* cv. Alb-arino, *Food Technology Biotechnology*. 2005; 43(1):79-8.