Project Report

On

Production of red wine and white wine

Submitted to

Chaudhary Ranbir Singh University, Jind

For partial fulfillment of requirement of the degree of

BACHELORS OF SCIENCE

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Acknowledgement

I would like to express my heartfelt gratitude and appreciation to all those who have contributed to the successful completion of this experiment on wine production. This project would not have been possible without the support, guidance, and assistance of numerous individuals and organizations.

First and foremost, I would like to extend my deepest thanks to my supervisor, [DR. POONAM DUHAN], for their invaluable guidance and mentorship throughout this experiment. Their expertise, patience, and constant encouragement have been instrumental in shaping the direction and progress of this research study. I am truly grateful for their unwavering support.

I would also like to thank the members of my research team, whose hard work, dedication, and collaborative efforts have greatly contributed to the success of this experiment. Their commitment to excellence and their willingness to share their knowledge and expertise have been invaluable. Their contributions have significantly enriched the quality of this research study.

Furthermore/ I would like to express my gratitude to the staff and management of [Green grapes wine], who graciously provided access to their facilities and resources for conducting this experiment. Their cooperation and assistance in granting us the necessary permissions and materials have been crucial in carrying this research. Their commitment to promoting scientific inquiry and their enthusiasm for the advancement of the wine production industry are commendable.

I would also like to extend my thanks to the participants who volunteered their time and contributed to this study. Their willingness to be part of this experiment and their honesty in providing their feedback and observations have been invaluable. Their participation has proved us with valuable insights and data, which have greatly enriched the finding of this research.

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In addition, I would like to acknowledge the contributions of various experts and professionals in the field of wine production. Their published works, insights, and guidance have been instrumental in shaping the theoretical framework and methodology of this experiment. Their collective efforts in advancing the knowledge and understanding of wine production have paved the way for this research.

I would also like to express my gratitude to my friends and family for their unwavering support and encouragement throughout this journey. Their belief in me and their willingness to provide a listening ear and words of encouragement have been invaluable. Their support has been a constant source of inspiration, and I am truly grateful for their presence in my life.

In conclusion, I would like to express my deep appreciation to all those who have contributed to the successful completion of this experiment on wine production. Their support, guidance, and collaboration have been invaluable, and I am truly grateful for their contributions. This project would not have been possible without their involvement, and I am honoured to have had the opportunity to work with such exceptional individuals and organizations.

ARTI

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CERTIFICATE

This is to certify that ARTI a student of B.Sc. Final Year Biotechnology has completed one-month Project entitled "WINE PRODUCTION" which is being submitted to the Govt. College, Jind.

To the best of my knowledge the work has not been submitted in part or in full to any other university or institute for the award of any degree.

Advisor

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Introduction

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Chapter 1

Introduction

In recent years, the field biotechnology has revolutionised many industries Including food and beverage production. One fascinating application of biotechnology is in the production of wine. Wine, has a long history and rich cultural significance. Biotechnology offers a novel approach to enhance and optimise the winemaking process, Resulting in higher quality wines with improved characteristics.

Wine production involves the conversion of grape juice into wine through a series of complex biochemical reactions. These reactions are mediated by microorganisms, mainly yeast, which ferment the sugar in grape juice, producing alcohol, Biotechnology methods aim to enhance this natural fermentation process by employing advanced techniques and manipulating the microorganisms involved.

Green grapes, black grapes and a combination of black and green grapes are used in the production of wine. Each type of grape brings its unique characteristic to the final product. Green grapes are known for their crispness and acidity, which contributes a refreshing and lively quality to the wine. Wines made from green grapes often have a light and citrusy flavour profile with hints of green apple and lemon. They are commonly used in the production of white wines such as Sauvignon Blanc and Riesling.

On the other hand, black grapes, also known as red grapes, offer a rich and robust flavour to the wine. These grapes typically have higher tannin levels, which give the wine a bold and structured character. Black grape wines can range from light and fruity, like

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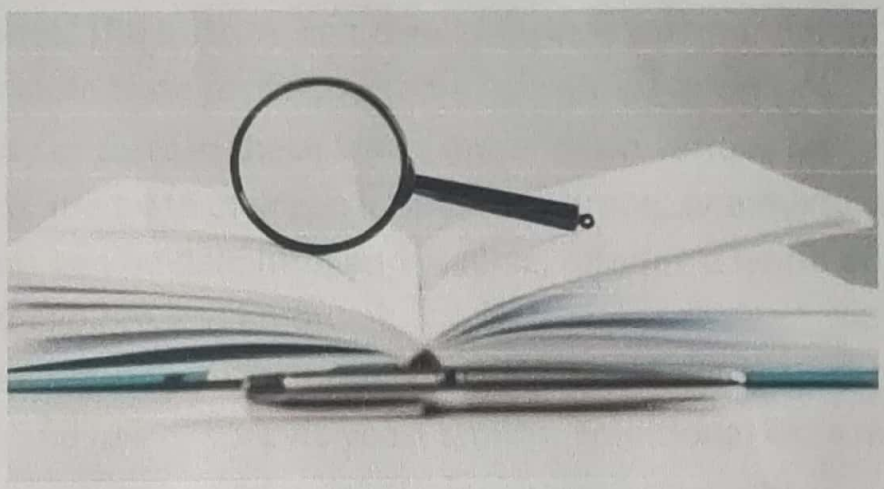
Review Literature



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Pinot Noir, to full bodied and complex, like Cabernet Sauvignon. They are commonly used in the production of red wines.

When black and green grapes are combined, the resulting wine can have a harmonious blend of Flavors. The combination can offer a balance between the crispness of green grapes and the richness of black grapes. The mixture can result in wines with a medium body and a versatile taste profile, suitable for various occasions.

The quality of taste in these wines depends on various factors. Ultimately, the taste of green grape black grape, or a mixture of both wines can be delightful and diverse, offering a world of Flavors to explore and enjoy.

On the key aspect to wine production in biotechnology is the selection and use of specific yeast strains. Traditional wine making utilizes natural occurring yeast strains present on grape skins for fermentation. However, biotechnology allows for the use of genetically modified old engineered yeast strains that offer advantages such as increased fermentation efficiency, Improved aroma profiles, and tolerance to specific environmental conditions. These modified yeast strains can optimize the fermentation process and contribute to the desired wine characteristics.

Another area where biotechnology has made significant contributions to wine production is the control of fermentation and aging conditions. Temperature, oxygen levels, and nutrient availability play crucial roles in shaping the final wine product. Biotechnological tools enable winemakers to precisely control these parameters, Ensuring consistent and desirable outcomes. For example, temperature-controlled fermentation tanks and specialized oxygen management systems have been developed to enhance.

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Chapter 2

Review of Literature

- **History of wine production and contributions of scientists:**

Wine has been a popular Beveridge of mankind for thousands of years. Our natural furnace of these drink stems from the wonderful taste, its nutritional properties and not list its psychotropic (intoxicating) effects.

Out of all alcoholic drinks, none has had such an impact on society. The trade of wine between cultures opened up channels for religious and philosophical ideas to spread across Europe. Wine is also frequently mentioned in the Bible from Noah and his grape wines, to Jesus, perhaps, the finest winemaker till date.

Centuries ago, a wine industry was also the mark of a provident country, as only developed societies could support a prosperous and competitive wine industry. It is often said that Western society built its foundations on wine.

Ancient history

- **7000-6000 BCE:** The earliest evidence of fermented grape wine come from China, where pottery jars with traces of alcohol were found in Jiahu.
- **6000 BCE:** The earliest known wine production in the Caucasus region (modern day Georgia).
- **5000 BCE:** Evidence of wine making in Iran (Zagros Mountains) and America (Areni-1 cave, contains the world's oldest known winery.
- **3000 BCE:** Egyptian and Mesopotamian produce wine, often used in religious wine ceremonies.
- **1700 BCE:** The code of Hammurabi (Babylon) contains early loose regulating wine.

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Classical antiquity (1000 BCE - 500CE)

- **1000 BCE:** The Phoenicians spreads while making across the Mediterranean, including Greece and North Africa.
- **800 BCE:** Greek civilization flourishes refining viticulture culture and spreading wine culture across Europe.
- **200 BCE- 100CE:** Roman Revolutionize Wine making with new techniques (e.g., Barrel aging, amphora storage) And expand wine yards across their empire.
- **92 CE:** Emperor Domitian Bans new vineyards planting outside Italy to control wine supply.

Mendives Period (500-1500 CE)

- **500- 1000 CE**: Monasteries in Europe, particularly in France and Germany, preserving and improving wine making techniques.
- **1152 CE**: The marriage of Eleanor of Aquitaine to Henry II of England boosts the wine trades between Bordeaux and England.
- **1300s**: The concept of terroir Soylent climate influence on wine begins to emerge in France.
- **1492**: European exploration leads to the introduction of wines to the America.

Renaissance to industrial Age (1500-1900 CE)

- **1500s:** Spanish missionaries introduce winemaking to Mexico and South America (Chile and Argentina).
- **1600s:** Dutch traders influence the fortified wine industries (port, Sherry and Maderia).
- **1700s:** The Bordeaux wine classification system beings informally.
- **1855:** The Bordeaux wine officially classification system is established by Napoleon III.
- **1860S:** The phylloxera plague devasted European wines on to American root stock.

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Modern Era (1900- Present)

- **1920-1933: Prohibited in U.S. significantly distributed the American wine industries.**
- **1960-1970s:** The rise of California wine cultivating in the famous "judgement of Paris"
- **1990-2000s:** The global wine industry expands, with China emerging as a major producer and consumer.
- **Present:** Suitable viticulture, climate change adaption and natural wines are shipping the future of winemaking.

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Chapter 3

Materials or Ingredients

1). Black Grapes-1kg.

2). Wheat – 50 kg.

3). Cinnamon

4). Cardamom

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5). Cloves-4

6).Sugar-0.5 kg.

7). Dry Yeast-1 tsp.

8). Beet Root Juice-150ml

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