

**RESEARCH AND DEVELOPMENT FINAL PROJECT  
“VINRANGE” AROMATIC ORGANIC ORANGE ZEST  
VINEGAR WITH DOUBLE STEPS FERMENTATION**



**OTTIMMO**

**BY:**

**EVAN**

**1774130010030**

**STUDY PROGRAM OF CULINARY ART OTTIMMO  
INTERNATIONAL MASTER GOURMET ACADEMY  
SURABAYA**

**2019**

## ACKNOWLEDGEMENT

After many hours and effort, “Research and Development of ‘VINRANGE’ Aromatic Organic Orange Zest Vinegar with Double Steps Fermentation” could be completed at least. May the contribution of God and His help be appraised in the completion of this project. The accomplishment of this project is to fulfil the required term of finishing the author’s studies for the Diploma III of Culinary Arts in Ottimmo International.

Meanwhile, throughout the whole process, the author was helped by a lot of individuals. The help comes in various ways in which some of them have guided the author to finish the project. In the meantime, the others were voluntarily lending their taste bud and nose. The author would like to express the gratefulness and deliver a sincere thanks to,

1. The author’s friends and juniors who have spare their time to partake in the product testing and survey.
2. Ms. Heni as an advisor which guide the author to this very own moment.
3. Ms. Nia as an indirect advisor which sometimes guide the author alongside the process.
4. Ms. Irra C Dewi, S.Pd.,M.S.M as Head of the Culinary Arts Studies Program.
5. Mr. Zaldy Iskandar, B.Sc as Director of Akademi Kuliner dan Patiseri OTTIMMO International Surabaya.

Surabaya, 19 August 2019

Author

Evan

## **PLAGIARISM STATEMENT**

I certify that this assignment/report is my own work, based on my personal study and/or research and that I have acknowledged all material and sources used in its preparation, whether they be books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication. I also certify that this assignment/report has not previously been submitted for assessment in any other unit, except where specific permission has been granted from all unit coordinators involved, or at any other time in this unit, and that I have not copied in part or whole or otherwise plagiarised the work of other students and/or persons.

On this statement, I am ready to bear the risk/any sanctions imposed to me in accordance with applicable regulations, if in the future there is a breach of scientific ethics, or you have a claim against the authenticity of my work.

Surabaya, 19 August 2019

Author

Evan

## EXECUTIVE SUMMARY

Vinrange is a vinegar product that is made from orange peel. Vinegar is chosen because of its use in the culinary industry. Apple cider vinegar, red wine vinegar, white wine vinegar, and distilled vinegar are the example of vinegar available in the market for the meantime. Vinrange is a new kind of vinegar made from the rind and the pith of the orange. Vinrange itself priced at IDR 41,000 each bottle (450 ml) which is still in the price range of its competitors.

Making vinegar requires two important processes. They are alcoholic fermentation and acetic acid fermentation. The alcoholic fermentation starts by breaking down the carbohydrate into ethyl alcohol and CO<sub>2</sub> as a byproduct in an anaerobic condition, this process is called glycolysis. The acetic acid fermentation is a process of making acetic acid by forming acetaldehyde from ethanol called alcohol dehydrogenase. Then, acetaldehyde will be hydrogenated to form hydrated aldehyde. The hydrated aldehyde then made into acetic acid, this process is called acetaldehyde dehydrogenase.

The vinegar despite its use in the culinary industry has another use in daily activities. The vinegar could be used to clean the spot in faucet and sink. Apple cider vinegar is used as a healthy drink to reduce the risk of heart disease and hypertension.

The orange peel is chosen because of its health benefits. It contains vitamin and antioxidants. Vitamin C is the highest amount of vitamin could be found in the orange. The antioxidants found in the orange including flavonoids and carotenoids are resilient substance against free radical. Vinrange contains as much as 44.25% vitamin C and 45.04% of antioxidant. These are the good reasons for making vinegar out of orange peel because of the health benefits.

**Keywords: fermentation, healthy, orange peel, vinegar**

## TABLE OF CONTENTS

<b>APPROVAL</b> .....	i
<b>ACKNOWLEDGEMENT</b> .....	ii
<b>PLAGIARISM STATEMENT</b> .....	iii
<b>EXECUTIVE SUMMARY</b> .....	iv
<b>TABLE OF CONTENT</b> .....	v
<b>LIST OF PICTURES</b> .....	viii
<b>LIST OF TABLES</b> .....	ix
<b>CHAPTER I INTRODUCTION</b> .....	1
1.1 Background .....	1
1.2 Reason for Ingredients Selection .....	4
1.3 The Content of Nutrients and Health Benefits .....	4
<b>CHAPTER II INGREDIENTS AND UTENSILS OVERVIEW</b> .....	9
2.1 Ingredients List and Description .....	9
2.1.1 Sunkist Orange .....	9
2.1.2 Granulated Sugar .....	9
2.1.3 Mineral Water .....	10
2.1.4 Yeast .....	11
2.1.5 Citric Acid .....	11
2.2 Tools and Equipment List .....	12
2.2.1 Digital Scales .....	12
2.2.2 Gastronome .....	13
2.2.3 Glass Jar .....	13
2.2.4 Filter Paper .....	13
2.2.5 Spoon .....	14
2.2.6 Knife .....	14
2.2.7 Plastic Wrap .....	15
2.2.8 Pot .....	15
2.2.9 Wooden Spatula .....	16

2.2.10 Cutting Board .....	16
2.2.11 Plastic Funnel .....	17
<b>CHAPTER III NEW PRODUCT PROCESSING SEQUENCE .....</b>	<b>18</b>
3.1 The Processing Product .....	18
3.1.1 Preparation Process.....	20
3.1.2 Alcoholic Fermentation Process .....	21
3.1.4 Acid Fermentation Process .....	22
3.1.5 Packaging Process .....	23
3.2 Final recipe .....	24
<b>CHAPTER IV NEW PRODUCT OVERVIEW .....</b>	<b>26</b>
4.1 Nutrition Fact .....	26
4.2 Sensory Test .....	28
4.3 Shelf Life .....	29
<b>CHAPTER V BUSINESS PLAN .....</b>	<b>30</b>
5.1 Strength, Weakness, Opportunities, and Threat Analysis .....	30
5.1.1 Strength .....	30
5.1.2 Weakness .....	30
5.1.3 Opportunities .....	31
5.1.4 Threat .....	31
5.2 Marketing Aspect .....	31
5.3 Technical Aspects .....	32
5.4 Financial Aspect .....	33
5.4.1 Variable Cost .....	33
5.4.2 Fixed Cost .....	34
5.4.3 Overhead Cost .....	34
5.4.4 Breakeven Point .....	35
<b>CHAPTER VI CONCLUSION .....</b>	<b>37</b>
6.1 Conclusion .....	37
6.2 Suggestion .....	37
<b>REFERENCES .....</b>	<b>39</b>
<b>APPENDIX .....</b>	<b>43</b>

Appendix 1. Packaging Design .....	43
Appendix 2. Product Logo .....	44
Appendix 3. Documentation .....	44
Appendix 4. Approved Recipe .....	xx
Appendix 5. Consultation Form .....	xx

## LIST OF PICTURES

Picture 1 .....	9
Picture 2 .....	10
Picture 3 .....	10
Picture 4 .....	11
Picture 5 .....	12
Picture 6 .....	12
Picture 7 .....	13
Picture 8 .....	13
Picture 9 .....	14
Picture 10 .....	14
Picture 11 .....	15
Picture 12 .....	15
Picture 13 .....	16
Picture 14 .....	16
Picture 15 .....	16
Picture 16 .....	17
Picture 17 .....	19
Picture 18 .....	20
Picture 19 .....	21
Picture 20 .....	21
Picture 21 .....	22
Picture 22 .....	23
Picture 23 .....	27



## LIST OF TABLES

Table 1 .....	5
Table 2 .....	28
Table 3 .....	33
Table 4 .....	34
Table 5 .....	34

**RESEARCH AND DEVELOPMENT NEW PRODUCT  
FINAL REPORT**

**Vinrange (Aromatic Organic Orange Zest Vinegar with Double Steps  
Fermentation)**

Arranged by:


**EVAN (1774130010030)**

Surabaya, 19 Agustus 2019


Approved by:

Heni Adhianata, S.TP., M. Sc ..... 


(199006131402016)

Dr. Ir. Fadjar Kurnia Hartati, M.P ..... 

(711116601)

Chef Ryan Yeremia Iskandar ..... 

(198212181601023)

Chef Kresna Bayu Pranata ..... 

(199608191801060)

Knowing,

**Director of OTTIMMO  
International Mastergourmet Academy**



Zaldy Iskandar, B. Sc.

NIP: 197310251201001

**Head of Study Program Culinary  
Art, OTTIMMO International  
Mastergourmet Academy,**



Irra Chrisyanti Dewi, S.Pd.,M.S.M

NIP. 197812011702028

## PLAGIARISM STATEMENT

I certify that this assignment/report is my own work, based on my personal study and/or research and that I have acknowledged all material and sources used in its preparation, whether they be books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication. I also certify that this assignment/report has not previously been submitted for assessment in any other unit, except where specific permission has been granted from all unit coordinators involved, or at any other time in this unit, and that I have not copied in part or whole or otherwise plagiarised the work of other students and/or persons.

On this statement, I am ready to bear the risk/any sanctions imposed to me in accordance with applicable regulations, if in the future there is a breach of scientific ethics, or you have a claim against the authenticity of my work.

Surabaya, 19 August 2019

Author



Evan