

# **EXTRACTION OF PECTIN FROM SWEET LEMON PEEL AND ITS UTILIZATION IN PREPARATION OF JELLY**



Master of Science in Food Chemistry and Quality Assurance

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Roll No.: 0117/13

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**The thesis submitted in the partial fulfillment of the requirements for the degree  
of Masters of Science in Food Chemistry and quality Assurance**

**Department of Applied Chemistry and Chemical Engineering  
Faculty of Food Science and Technology  
Chattogram Veterinary and Animal Sciences University  
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**JUNE, 2019**

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Afroz Jannat Laboni

June, 2019

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**JUNE, 2019**

**Dedicated**  
**To**  
**My Respected and**  
**Beloved Parents and**  
**Teachers**

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**The author**

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## List of abbreviations

<b>Words</b>	<b>Abbreviation</b>
%	Percent
ACC	Aerobic Colony Count
AMU	Atomic Mass Unit
ANOVA	Analysis of Variance
AOAC	Association of Official Analytical Chemists
AUA	Anhydrouronic Acid
BBS	Bangladesh Statistics Bureau
°C	Degree Celsius
Cfu	Colony forming units
cm	Centimeter
CVASU	Chattogram Veterinary and Animal Sciences University
FASSI	Food Safety and Standards Authority of India
g	Gram
ICMSF	International Commission on Microbiological Specifications for Foods
Kg	Kilogram
KPa	Kilopascal
ml	Milliliter
mM	Millimole
MPN	Most Probable Number
N	Normality
PRTC	Poultry Research and Training Center
SPC	Standard Plate Count
TMCT	Tukey's Multiple Comparison Test
TPC	Aerobic Plate Count
TSS	Total Soluble Solid
WHO	World Health Organization



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## Abstract

This study was conducted on the potential of citrus peel as a source of pectin. Pectin was extracted from Sweet lemon (Malta) peel powder using two different acids (citric and nitric) and times (30 & 60m), at three different temperatures and P<sup>H</sup> (60, 70 & 80°C), (1.5, 2.0 & 2.5P<sup>H</sup>), respectively. Pectin yields varied from 18.7% to 72.5% and 15.4% to 42.8% extracted by using citric acid and nitric acid, respectively. The best extraction condition was found to be higher in yield by using citric acid at 80°C for 60m with P<sup>H</sup> of 1.5. The equivalent weight of pectin isolated from sweet lemon peel powder using citric acid and nitric acid as reagents was found to be 312.57 and 833.05amu, respectively. Whereas, the methoxyl content of extracted pectin was found to be 6.18% and 5.29%. On the other hand, anhydrouronic acid content was found 91.74% and 52.01% for citric acid and nitric acid, respectively. The percentage of methoxyl content of isolated pectin showed higher by using citric acid and percentage of anhydrouronic acid was found to be higher by using citric acid as compared to nitric acid as reagents. The ash and moisture content of isolated pectin were 7.38% and 5.212% for citric acid and 3.48% and 7.512% for nitric acid, respectively. Microbial and Sensory evaluation of developed jelly were observed. The result of microbial analysis was found negative for all jelly samples. The jelly developed from pineapple fruit extract with addition of 0.5% pectin extracted by using citric acid was found to be the less in score as compared to nitric acid pectin. The outcome got from this examination showed that pectin extracted from malta peel is with high quantity and quality and is promising for commercial production.

**Key words:** Anhydrouronic acid, Ash, Citric acid, Equivalent weight, Jelly, Methoxyl, Moisture, Nitric acid, Pectin, P<sup>H</sup>, Reagents, Temperature, Time, Yield.