

**THE CHEMICAL ANALYSIS OF SEA GRAPES AND GREEN TEA
CONSTITUENTS AS FIRING NIGHT CREAM**

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**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Applied Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

August 2022

AKNOWLEDGEMENT

In the name of Allah, the Most Gracious and the Most Merciful. All thanks and blessings to Allah for the successful completion of this research proposal of final year project. I am grateful to God for all of the chances, hardships, and strength that have been given upon me in order to complete the research proposal. During this process, I gained a great deal of knowledge and experience, both academically and personally.

First and foremost, I would want to express my gratitude to my supervisor, Dr. Non Daina Binti Masdar, for her guidance, advices, patience, and most importantly, positive encouragement and a warm heart in helping me complete my research proposal. Having her as my supervisor has been a genuine pleasure and honour. Then, my grateful appreciation extends to all members of my family. It would not have been feasible to complete my case study without their help, and they have always provided me with moral support and suggestions for writing this research proposal. Thank you for being a patient and understanding parent and providing me with the necessities, such as a WIFI connection, to finish my assignment.

Last but not least I would sincerely like to thank to all of my dear friends who have stood by me and supported me through thick and thin. My classmates, in particular, provided useful comment recommendations on my work, which inspired me to increase the quality of the task. I would want to express my appreciation to everyone who has helped me write this task, both directly and indirectly. May God bless the above-mentioned people with prosperity and honour throughout their lives.

ABSTRACT

PROPERTIES OF SEA GRAPE AND GREEN TEA

Plants from different families were selected which were *Caulerpa lentillifera sp.* and *Camellia sinensis sp.* *Caulerpa lentillifera sp.* also known as sea grape is a type of seaweed. While *Camellia sinensis sp.* is commonly known as green tea. These plants were chosen as main ingredients in firming night cream because they possess wide bioactive compound. Chemically, biologically and physically analysis was conducted such as antibacterial assay, antioxidant assay, heavy metals assay and total phenolic content. The sea grapes and green tea plants were extracted by using the maceration method, where for sea grapes ethanol is used as a solvent and for green tea methanol is used as a solvent. The percentage yield for sea grape and green tea are 14.57% and 10.74%. Total Phenolic Content analysis value of green tea and sea grape obtained were 0.069 ± 3.14 and 0.244 ± 2.40 (mg GAE/g) respectively. The highest percentage of radical scavenging capacity for antioxidant activity was 61.35% for green tea while for sea grape it is 58.62%. The inhibition zones of *Escherichia coli* and *Bacillus licheniformis* were 0.80 cm to 1.40 cm for antibacterial assay. The elements of heavy metals assay were found in the sea grape and green tea in low concentration. The presence of phenolic compound in both plants extract was successfully identify its functional groups when analysed with Fourier Transform Infrared Spectroscopy analysis (FTIR). The pH of formulated firming night cream is ranging between 6.18 to 6.21 which suitable for human skin. These tests were examined to ensure that the formulation for firming night cream is not harmful to human skin and can give benefits when applied it to skin.

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CHAPTER 1

INTRODUCTION

1.1 Background

Skin firmness is one of the most crucial features of attractive and healthy-looking skin. Skin that is firm is defined as tight and springy, rebounding back into place after being stretched or pulled. However, skin aging which is skin loses elasticity and firmness as individuals' age, causing it to loosen and sag. Skin aging is classified into two parts: intrinsic and extrinsic aging (Langeveld *et al.*, 2021). Extrinsic aging is influenced by external causes such as cigarette smoke, UV light, or trauma, whereas genetic and hormonal factors influence intrinsic aging. In skin aging, fibroblasts the main component that composed of the dermis are responsible for the creation of extracellular matrix (ECM) components, mainly collagen. The number of fibroblasts that create collagen and vessels that supply the skin decrease, resulting in increased laxity and the formation of wrinkles (Chaudhary *et al.*, 2019). Fibroblasts are also responsible for production of elastic fibres, which help to prevent photoaging. However, increasing levels of oxidative stress and reactive oxygen species (ROS), affect fibroblast functions. Treatment with antioxidants, such as plant-derived phenolic compounds, can help restore fibroblast function (Merecz-Sadowska *et al.*, 2021). Phenolics reduce reactive oxygen species (ROS) production and increase collagen expression in fibroblasts.