Clean Extraction of Pectin from Fruit Peels

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NOVELTY, INVENTIVENESS AND APPLICABILITY

Pectin is a native polysaccharide found in the cell wall and middle lamellae of plant tissue (especially in fruits & vegetables).

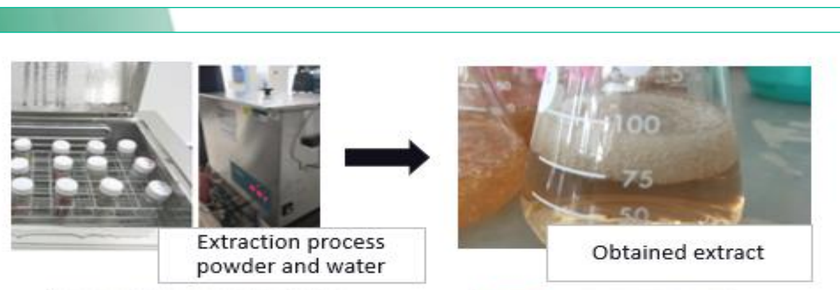
Commercial pectin is usually obtained from **acid extraction** of citrus peels, apple pomace or sugar beet pulp

Are being utilized in **food**, **pharmaceutical** and **cosmetic** industry

In this project, fruit peels ("waste)" from fruit stores available in the city and even rural area were utilized to acquire pectin as one of industrial ingredients.

Different from commercial extraction which mostly used acid, **clean extraction** using **ONLY WATER** is applied to obtain pectin with remarkable yield.

The fruit peels used are from pomelo, okra, dragon fruit and pineapple which can easily be obtained in Malaysia.



RESEARCH ACHIEVEMENT

Gold Medal, International Invention, Innovation and Technology Exhibition (ITEX19), Malaysia.

Gold Medal, MTE 2019 (21-23 February). Revolution of ionic liquids and deep eutectic solvents for green chemistry.

A.A.M. Elgharbawy, A. Hayyan, M. Hayyan, S.N.R. Mohamed E. S. Mirghani, Hamzah Mohd. Salleh, Gek Cheng Ngoh, S.Q. Liew, Mohd Roslan Mohd Nor, Mohd Yakub Zulkifli bin Mohd Yusoff, Yatimah Alias, Natural Deep Eutectic Solvent-Assisted Pectin Extraction from Pomelo Peel Using Sonoreactor: Experimental Optimization Approach, Processes. 7 (2019) 1–19. doi:10.3390/pr7070416.

INTELLECTUAL PROPERTY

Applied

LEVEL OF IMPACT

Adding more **halal products** to the market

Reducing waste on land which falls under the **DSG12** (Responsible production and consumption) by **recycling the waste** and eliminating the **use of toxic chemicals**

Reducing **fruit waste** in market

Cheap pectin source

Safe extraction utilized

RESEARCH/PRODUCT READINESS

Ready and easy to use	☑
Economical	☑
Safe	☑
Stable formulation	☑

COMMERCIAL POTENTIAL/INDUSTRY PARTNER

- Similar to commercial pectin
- Safe for use in food formula/ preparation
- High degree of esterification (>60)