

## ***Hylocereus polyrhizus* peel's high-methoxyl pectin: A potential source of hypolipidemic agent**

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### **Abstract**

In the present study, high-methoxyl pectin (HMP) was extracted from *Hylocereus polyrhizus* peel's using physico-chemical process. In addition, the hypolipidemic activity of HMP was investigated at different concentration and time corresponding to its adsorption ability. FTIR and contact angle analysis were used to determine the sorbent characterization. A high degree of esterification (63.8%) and the contact angle (95.5°) confirmed hydrophobic nature and resulting bad wetting of the HMP extract, respectively. The methoxyl content in the pectin acted as an affinity-precursor of the pectin towards cholesterol due to its increased hydrophobicity. The maximum equilibrium uptake capacity of cholesterol of 370.5 mg/g (0.96 mmol/g) was observed by HMP. The experimental data showed good fitting for Freundlich isotherm equation and followed pseudo-first-order kinetic model with a correlation coefficient ( $R^2$ ) of 0.89–0.97 due to physisorption mechanism. Intra-particle model confirmed that the cholesterol sorption rate by HMP was significantly influenced by external mass transfer (surface diffusion) and intra-particle diffusion (diffusion control). It was also revealed that the HMP extracted from *Hylocereus polyrhizus* peels possess a high affinity towards cholesterol, making it an ideal hypolipidemic agent.

**Keywords:** Cholesterol; High-methoxyl pectin; Hypolipidemic activity; Esterification; Freundlich isotherm

**DOI:** <https://doi.org/10.1016/j.ijbiomac.2019.03.143>

## **Acknowledgement**

The authors are thankful to Faculty of Engineering Technology, for providing technical and financial assistance to UMP ([PGRS-160361](#), Universiti Malaysia Pahang, Malaysia) and Ministry of Education, Malaysia (My [Brain-15](#)).