

---

若手の会 ポスター発表 | 若手の会ポスター発表

## [PA] 「若手の会」および「インターナショナルポスター賞」

2024年8月29日(木) 09:00 ~ 17:00 ポスター会場 (タワー75 2F 学生ホール)

---

### [PA-167] Extraction and characterization of pectin from citrus under pressurized carbon dioxide conditions

\*Pattarapisitporn Alisa<sup>1</sup>、野間 誠司<sup>1,2</sup> (1. 鹿児島大学、2. 佐賀大学)

#### [Purposes]

We used pressurized CO<sub>2</sub> (PCO<sub>2</sub>) as an environmentally friendly method for pectin extraction because it does not require acidic or basic solvents. Pectin extracted by PCO<sub>2</sub> (PCO<sub>2</sub>-pectin) from grapefruit has unique properties, including a larger molecular weight (MW), a higher degree of esterification (DE), and a more branched structure than pectin extracted by the conventional method with HCl (CM-pectin). However, the PCO<sub>2</sub> method provided a low pectin yield (7.4%), which was insufficient for commercial purposes (1). Therefore, this study aimed to (i) employ PCO<sub>2</sub> and green chemicals to improve pectin extraction, and (ii) evaluate the physicochemical characteristics of the extracted pectin.

#### [Methods]

One gram of grapefruit residue powder was suspended in 30 mL of deionized water, as well as 30 mM sodium citrate, sodium oxalate, sodium acetate, and sodium phosphate solutions. The extraction process was conducted under PCO<sub>2</sub> at 2.5 MPa, at 90° C for 180 min. Pectin in the solution was precipitated, purified using ethanol, and dried. The yield and physicochemical structure of the dried pectin were determined. Response surface methodology (RMS) analysis was used to determine the optimal extraction conditions.

#### [Results]

PCO<sub>2</sub> produced the highest pectin yields of 41% and 46% (w/w) with high DE when sodium oxalate and sodium phosphate were utilized, respectively. PCO<sub>2</sub> with sodium oxalate retained a pectin structure comparable to that of water extraction, whereas PCO<sub>2</sub> with sodium phosphate exhibited higher branching and MW. The optimal conditions for maximum yield were determined to be 90° C for 180 min with 30 mM sodium oxalate.