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We have investigated the rind of the common pomegranate (*Punica granatum* L.), which is waste material from the production of pomegranate juice.

To isolate the pectin, the air-dry raw material (200 g), after being boiled with ethanol and chloroform, was treated with a 1% solution of formalin (4°C, 16 h) to free it from polyphenolic compounds. The residue of the raw material was extracted twice with a mixture of equal volumes of 1% solutions of oxalic acid and ammonium oxalate at 75°C. The extract obtained (2 liters) was dialyzed against distilled water, evaporated to 1 liter, and poured into ethanol (4 liters). The precipitate was separated off, dissolved in water, and reprecipitated with ethanol. The yield was 4.16 g (2.08%). The pectin formed a greyish powder with a brown tinge containing 45.03% of uronic anhydride [1], 6.4% of OCH<sub>3</sub>, and no nitrogen;  $[\eta] = 7.3$ ; mol.wt. 58,000 [2]. In a hydrolyzate of the pectin (2 N H<sub>2</sub>SO<sub>4</sub>, 98°C, 32 h), rhamnose, arabinose, mannose, glucose, and galactose were detected by PC and GLC in a ratio of 1:15:6:17.5:4.6.

A solution of the pectins (1.0 g in 200 ml of H<sub>2</sub>O) was chromatographed on DEAE-cellulose with successive elution by water and 0.1, 0.2, and 0.3 N NaOH.

The aqueous eluates were evaporated to a syrup and were precipitated with ethanol. Yield 0.08 g (8%, neutral fraction). A hydrolyzate (2 N H<sub>2</sub>SO<sub>4</sub>, 98°C, 14 h) was found by descending PC on FN 11 paper (GDR) in the butan-1-ol-pyridine-water (6:4:3) system to contain rhamnose, arabinose, mannose, and glucose in a ratio of 1:3:3:29 (GLC of the acetates of the aldonitriles [3], steel column 0.3 × 200 cm, Chromaton N-AW, 5% of XE-60, 210°C, He 55 ml/min).

The alkaline eluates, after dialysis against distilled water, were precipitated with ethanol. Yield 0.75 g (75%, acid fraction).

The acidic polysaccharide was insoluble in water and in solutions of alkali. Its uronic anhydride content was 86.6%. The acidic polysaccharide was hydrolyzed (2 N H<sub>2</sub>SO<sub>4</sub>, 100°C, 24 h), the hydrolyzate was neutralized with BaCO<sub>3</sub>, and the precipitate was separated off. The filtrate was treated with ethanol (20 ml), and the precipitate of barium uronate that deposited was separated by centrifuging (precipitate A). The supernatant liquid was evaporated to a syrup; mannose, galactose, rhamnose, arabinose, and glucose were found by GLC to be present in a ratio of 1:1.3:2.1:4.2:6.2. Precipitate A was suspended in water and treated with KU-2 resin (H<sup>+</sup> form), and the solution was evaporated to a syrup; galacturonic acid was identified by PC (under the given conditions) and paper electrophoresis (time of electrophoresis 3.5 h, 1% CH<sub>3</sub>COOH, FN-7, 5 mA, 940 V). Partial hydrolysis (2 N H<sub>2</sub>SO<sub>4</sub>, 95°C, 5 h) yielded a polygalacturonide with  $[\alpha]_D^{20} +297.5^\circ$  (c 0.8, 0.1 N NaOH). Only galacturonic acid was detected in a hydrolyzate of the latter.

On the basis of viscosity determinations, monosaccharide composition, and molecular weight, it may be concluded that the pomegranate pectin studied is similar to sugar-beet pectin.

## LITERATURE CITED

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