Optimization of pectin extraction from fruit peel of purple passion fruit (*Passiflora edulis* Sims) in Vietnam

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Abstract

Purple passion fruit has been grown in Vietnam since 1990 and production has increased in recent years. The pulp of passion fruit is usually used in the beverage industry, but the shell of this fruit which contain large amounts of pectin, goes to waste. Pectin is widely used in the food industry as a gelling agent and stabilizer. Utilization of purple passion fruit (*Passiflora edulis* Sims) peel for pectin extraction was studied. The peel obtained after juice extraction was blanched in boiling water (95-100°C) for 5 min, dehydrated in a cross flow hot air drier at 60°C to a moisture content of 4.2 g.100 g^{-1} of dried peel. The dried peel has 1.125% of reducing sugar; 0.56 g.L^{-1} of total acid; 21% of solvent materials and 15% of pectin. Pectin was extracted using three different acids (HCl, H_2SO_4, CH_3COOH) at different ratios (1:10, 1:15, 1:20, 1:30, 1:40 aicd to dried peel ratio), temperatures (70, 80, 90, 100°C), pH (1, 1.5, 2, 2.5, 3) and extraction times (30, 45, 60, 90 min). Temperature, pH and extraction time had highly significant effects on pectin yield. The optimal conditions for maximum pectin yield (13.5 g pectin.100 g^{-1} of dried peel) were the use of HCl at 96°C and pH 1.96 with an extraction time of 83.5 min. Quality characteristics of pectin extract included good gel forming, high gel stability, good quality in an acid environment, and high viscosity of about 2 times more than commercial pectin.