

Pengaruh Modifikasi Ikat Silang pada Tepung Pati Kentang terhadap Sifat Fungsional dan Daya Cerna In Vitro serta Aplikasinya sebagai Bahan Dasar Pembuatan Mi Bebas Gluten = Effect of Cross-Linking Modification on Functional and In Vitro Digestibility Properties of Potato Starch Flour and Its Application for Gluten-Free Noodles

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Abstrak

Pati yang merupakan polimer karbohidrat, banyak terdapat di dalam bahan pangan makanan sehari-hari seperti tepung terigu yang umumnya digunakan sebagai bahan baku pembuatan mi. Namun, seseorang yang menderita penyakit seliak dan intoleran terhadap gluten tidak dapat mengonsumsi mi jenis ini. Tepung pati kentang dapat dimanfaatkan sebagai bahan baku dalam pembuatan mi bebas gluten. Tepung pati kentang dimodifikasi melalui metode ikat silang untuk meningkatkan sifat fungsional serta meningkatkan pati resisten. Pada penelitian ini, tepung pati kentang berhasil dimodifikasi melalui metode ikat silang dengan menggunakan Sodium Trimetafosfat (STMP) sebagai agen pengikat silang. Keberhasilan dari modifikasi pati kentang dapat dilihat dari nilai kandungan fosfor dan derajat substitusi yang mengalami kenaikan. Pengujian sifat fungsional pati seperti kelarutan, swelling power, dan daya cerna juga menunjukkan perubahan dibandingkan pati kentang tanpa modifikasi. Hasilnya menunjukkan bahwa pati kentang dengan konsentrasi 10% STMP memiliki tingkat ikatan silang yang tinggi, sehingga menurunkan sifat kelarutan dan swelling power, serta mengalami peningkatan pati resisten yang mengakibatkan penurunan daya cerna. Mi bebas gluten yang terbuat dari tepung pati kentang hasil modifikasi juga mengalami peningkatan ketahanan pencernaan terhadap hidrolisis enzim alfa-amilase.

.....Starch is a carbohydrate polymer which is widely found in daily food. Starch can be obtained from various sources, such as wheat, corn, cassava, and potatoes. Wheat flour is one of the starch-containing food raw materials which is widely used in food products, for example noodles. However, someone who suffers from celiac disease and is gluten intolerant cannot consume this type of noodles. Potato starch flour can be used as a raw material in the making of gluten-free noodles. Potato starch flour was modified through the cross-linking method to improve functional properties and increase resistant starch. In this study, potato starch was successfully modified through the cross-linking method with STMP. The success of potato starch modification can be seen from the increased value of phosphorus content and degree of substitution. The tests results reveals there was a change for starch functional properties such as solubility, swelling power, and in vitro digestibility compared to native potato starch. The results showed that potato starch with a concentration of 10% STMP had a high degree of cross-linking, resulting in a decrease in solubility and swelling power, as well as an increase in resistant starch which resulted a decrease in digestibility. Gluten-free noodles made from cross-linked potato starch also had a significant increase resistance of in vitro digestion against hydrolysis by alpha-amylase enzymes.