PHYSICAL AND CHEMICAL PROPERTIES OF OKRA (*Abelmoschus esculentus* (L.) Moench) GUM AND PECTIN AND THEIR APPLICATION IN FOOD PRODUCTS

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ABSTRACT

The okra plant (*Abelmoschus esculentus* (L.) Moench) is originally an African plant. In Thailand, okra is easily cultivated and widespread, so its cost is inexpensive. This study aims to determine the physical and chemical properties of gum and pectin from okra and their application in food products. Okra gum (OG) was prepared by extraction with deionized water at different conditions (70 – 90 °C for 10 – 60 min). The gum was then precipitated with ethanol to obtain okra pectin (OP). OG and OP were next dried in a hot air oven at 60°C for 18 h and 2 h, respectively, and then ground into powder. The obtained gum and pectin were analyzed for their physical and chemical properties. Application of OG and OP, at a concentration of 0.15% and 0.075%, respectively, in non-fat pasteurized chocolate milk and orange-flavored beverage was also studied. OG obtained from water extraction at 90 °C for 60 min gave the highest yield and viscosity, so this condition was selected for preparing OG. The yield of OG and OP powder was 45.6% and 29.7%, respectively. The viscosity of 1% (w/v) solution of OG was 43.1 cPs whereas that of OP was 715 cPs. OG contained 13.4% galacturonic acid (GA) with 45.5% degree of methylation (DM); while OP contained more GA (53.1%) with lower DM (32.1%). Both OG and OP were highly acetylated, with 5.7% and 12.3% degree of acetylation, respectively. The intrinsic viscosity and average molecular weight of OG were 586.6 cm^3/g and 198.3 kDa, which were lower than those of OP (1,852.9 cm^3/g and 848.8 kDa). Such differences in the physical and chemical properties result from the higher purity and lower free sugar content of OP. Food products containing OG and OP were accepted by the panelists in terms of color, odor and overall acceptability with an improved consistency and mouth feel compared with control samples (no OG/OP added). OG and OP could also help to prevent settling of cocoa powder in chocolate milk during refrigerated storage. It can be concluded that OG and OP were pectin-like polysaccharides in which OP contained greater amount of pectin. Both of them exhibit potential uses as a thickening agent and stabilizer in food products.

KEY WORDS: OKRA / PECTIN/ GUM/ PHYISCAL PROPERTIES / CHEMICAL PROPERTIES

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