The Effectiveness of Rice Bran Extract as a Natural Rubber Sheet Browning Inhibitor

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Rubber sheets made from natural rubber (NR) is one of the most profitable export products of Thailand. The undesirable dark brown color of rubber sheet, mostly derived from enzymatic reaction of polyphenol oxidase (PPO) presented in NR, is a significant problem in the manufacture of high quality and light-colored rubber sheets. The brown discoloration process in the rubber sheet is usually prevented by adding sodium bisulfite (NaHSO3) or sodium metabisulfite (Na2S2O5) as the reducing agents, causing significant operational health and safety issues. This project aims to find a safer, inexpensive, and environmentally-friendly way to inhibit PPO reaction using rice bran, which is a byproduct from rice grain refining and also a great natural source of antioxidants. The effectiveness of rice bran extract in inhibition of PPO reaction and brown discoloration is investigated. In addition, the degree of plasticity retention index (PRI), another main factor that determines the price and quality of the rubber sheets, is also investigated.

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