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ABSTRACT

Natural rubber (NR) latex comprises many naturally generating color components, especially the non-rubbers, which restrict some of the NR applications, especially for light-colored NR products, which are growing in demand. One way to diminish the yellow color of NR is to reduce or eliminate non-rubber components, i.e., lipids and proteins, from NR. This investigation focused on the factors influencing the yellow index (YI) in NR, including the discoloration reduction techniques. It was clear that proteins are a major contributing factor to the YI of NR. Thus, to reduce the YI of NR, the techniques to remove proteins were developed by increasing the number of washing through optimisation of speed and time of centrifugation. The percentage of total solid content (% TSC) of field NR latex, the blend ratio between cream rubber and skim latex, or bottom fraction from fresh-field NR latex collected from centrifugation process, were also found to be the important factors. The addition of sodium metabisulphites as a polyphenol oxidase (PPO)- reducing agent was also a powerful method to lessen the YI. Air-drying conditions of NR were also affirmed to affect the YI value due to the oxidative degradation of the endogenous non-rubber components at high temperatures.

SPEAKER BIOGRAPHY

Professor Jitladda Sakdapipanich was awarded a Japanese Government Scholarship to study at the Tokyo University of Agriculture and Technology. She graduated from the university in 1996 with a Master's Degree and a Ph.D. with the highest distinction. Upon completion, she joined the Faculty of Science of Mahidol University, Thailand. In 2011 she was promoted to Professor of Polymer Chemistry. Her research interest is on natural rubber. She commenced with the microstructural characterization of the natural rubber molecule in conjunction with the work on the in vitro synthesis of natural rubber, which provides the knowledge base for enhancing the chemical and physical properties of natural rubber. These investigations are also aimed to highlight the enormous production potential of natural rubber and its viability as a replacement for some synthetic rubbers. During her thirty years of diligent research, she has received many awards from numerous organizations such as the Thailand Research Fund, the New Energy Development Organization (NEDO), and the Japanese Ministry of Industry. In addition, she has been distinguished as a young scientist by the Toray Foundation, the Eno Foundation of Japan, the Thailand Innovation Organization, Princess Sirindhorn, and the Biotechnology Society of Japan, which awarded her the Young ASEAN Biotechnologist Prize. In addition to her 150 original articles and 330 conference papers, she has also authored five books, 18 patents, and 330 conference papers. She was recently recognized as one of the Top1% of researchers at Mahidol University, Thailand.