PREPARATION AND CHARACTERIZATION OF CREAMED AND CENTRIFIUGED NATURAL RUBBER LATEX TO REDUCE PROTEIN LEVELS

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by

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ABSTRACT

Latex concentration is a process which uses to enrich the Dry Rubber Content (DRC) of natural rubber latex (NRL). This study focused on the combination of Creaming and Centrifuging in concentrating NRL. In one method, NRL was creamed for ten hours, latex cream was separated, then subjected to centrifugation to produce Short-term Creamed Centrifuged Latex (SCCL). In the second method, NRL was creamed for 22 days until the DRC reached up to 60% and the separated latex cream was re-diluted to 30% and it was subjected to centrifugation to produce Long-term Creamed and Centrifuged Latex (LCCL). In both procedures, NRL was creamed using Sodium Alginate as the creaming agent. Variation of DRC of creamed latex with the time was recorded. Total solid content (TSC), DRC, Volatile fatty acids (VFA), Mechanical stability time (MST), Nitrogen content and Extractable protein (EP) were determined. A batch of centrifuged latex (CL) was also prepared for the comparison. It was found that the creaming rate was start to decline after an optimum period of ten hours. NRL with initial DRC of 30% reached up to 42% at this time period. Also both TSC and DRC values of SCCL is slightly below such values of CL and LCCL samples. Creaming prior to centrifugation has resulted in lowering the VFA and N-Content of the centrifuged latex. EP of CL was 168.53 ppm while creamed and centrifuged latex recorded un-detectable levels. MST of SCCL, LCCL and CL after 21 days of maturation has recorded as 820, 522 and 782, respectively. Thus, LCCL do not meet the minimum MST standards required to qualify LCCL for latex industry. Creaming NRL for ten hours followed by centrifugation (SCCL) could be an industrially viable method to produce low protein concentrated latex for special applications.

Keywords: Creamed centrifuged latex, dry rubber content, extractable Protein, natural rubber