# FORMULATION AND STABILITY EVALUATION OF TWEEN 20® CONSISTING NEEM OIL BASED EMULSION

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Process parameters and stability evaluation are important to develop a new formulation. Since Neem oil and Tween 20® are cheap, less toxic, highly available and affordable, these were chosen to formulate the emulsion. Objectives of the study were to formulate a stable emulsion consisting of Neem oil and Tween 20® and to evaluate the stability of the optimized formulations. Primary emulsions were formulated in different ratios of oil, water and surfactant by using the magnetic stirrer (300 rpm). Respective secondary emulsions were obtained by high shear homogenization (10,000 rpm) of optimized formulations of primary emulsions. Samples were subjected to centrifugation (1200 rpm) to determine the accelerated stability. All the optimized formulations of primary and secondary emulsions were subjected to observe short-term stability, accelerated stability for 14 days and long-term stability for 90 days. Most of the samples of primary and secondary emulsions were stable throughout the short-term stability evaluation period except one primary and two secondary emulsions. Most of the secondary emulsions showed greater stability period than that of respective primary emulsions. Creaming and phase separation were the main unstable conditions that occurred during the long-term stability evaluation period. Two primary emulsions and one secondary emulsion showed instability during the accelerated stability evaluation period. The best formula consisted of 45% Neem oil, 35% water and 20% Tween 20®. Secondary homogenization led to enhance the stability of the formulations..

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