

Solubilized System of Caffeine using Mixed Hydrotrophy of Niacinamide and Vanillin.

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- **Abstract:** This study aimed to provide a guide prescription for anti-cellulite cosmetics by establishing optimal conditions for dissolving high contents of caffeine while lowering the concentration of hydrotropes using mixed hydrotrophy that combines niacinamide and vanillin. To set up the optimal condition for dissolving caffeine in water at 25°C, niacinamide and vanillin were added while maintaining the mixing ratio of niacinamide and vanillin at 1.0 : 2.0, 1.0 : 1.5, 1.0 : 1.0, 1.5 : 1.0, and 2.0 : 1.0 until the caffeine was completely dissolved, and this result was compared with the minimum hydrotrope concentration (MHC) of a single hydrotrope. For dissolving 3%, 5%, 7%, and 10% of caffeine, the MHC of vanillin was 0.4632%, 1.4037%, 2.4993%, and 4.1173%, respectively, and the total hydrotrope concentration of mixed hydrotrophy was 0.5821%, 1.7867%, 2.8566%, and 4.8159%, respectively, when the mixing ratio of niacinamide and vanillin was 1.0 : 2.0. In other words, the total hydrotrope content of the mixed hydrotrophy was lower than the MHC of niacinamide but higher than the MHC of vanillin. However, vanillin can cause discoloration and odor, we propose the use of mixed hydrotrophy to have the advantages of each hydrotrope and minimize the disadvantages by lowering the MHC of a single hydrotrope.
- **Keywords:** Cellulite, Caffeine, Mixed hydrotrophy, Niacinamide, Vanillin