Synthesis and characterization of hydroquinone with amino acids
cocrystals by spectroscopic technique
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Abstract: A co-drug of hydroquinone (HQ) with amino acid as coformers were synthesized and studied with the aim of improving the HQ toxicity. The cocrystals of HQ with amino acids, alanine (Ala), glycine (Gly) and histidine (His) were synthesized at a molar ratio of 1:1 by grinding and evaporation techniques. The physicochemical characteristics were characterized by Fourier Transform Infrared spectroscopy (FTIR). The results showed that all the cocrystals were different in shape and size as compared with HQ crystal shape. The melting points of cocrystals were HQ-His (135.1-136.0 °C), HQ-Ala (250.1-258.1 °C) and HQ:Gly (167.3-169.0°C). The melting points of the cocrystals were different from hydroquinone and amino acids confirming that the formation of a cocrystal phase. The FTIR result showed the strong bands near 1700-2000 and 1440-1490 cm⁻¹. Thus, the cocrystals were formed via multiple hydrogen bonds between hydroxyl of hydroquinone with amine and carboxylic group of amino acid.

Keywords: Hydroquinone; Alanine; Histidine; Glycine; Cocrystal