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Isoniazid-oleanolic acid: A new dual drug co-crystal

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Tuberculosis (TB) is a disease which affects an equivalent of one third of the whole world's population, in 2014 alone, very close to 9.6 million cases were reported and about 2 million deaths recorded. At the moment, RIF, INH and PZA remain as basic drugs for the treatment of TB and it has been discovered that this drugs cause liver damage. Consequent to the above, a new set of drugs are therefore need for better treatment of TB. The work presented here involves investigation of co-crystals involving isoniazid and oleanolic acid. A 1:1 co-crystal involving isoniazid, a foremost first-line drug recommended by the World Health Organization for the treatment of tuberculosis, it damage the liver and oleanolic acid, a hepatotoxicity naturally occurring compound, has been synthesized for the first time. Considering drug combination perspective, this is an interesting pharmaceutical co-crystal because of the known side effect of isoniazid therapy which might be improved upon by the presence of the oleanolic acid. The co-crystal synthesis was carried out in three different conditions (solvent evaporation, solvent drop and direct grinding) and this new species were characterized by PXRD, TGA and SEM. The PXRD of the synthesized co-crystal compound maintained crystalline nature like isoniazid for the three methods; TGA for all the three methods have cleavage values from 220-360°C and the SEM images obtained from the three synthetic methods appears rod-like in nature. Our close encounter and study of this multi-API co-crystal is the improvement of patient's long-term medication compliance in long-term drug therapy, since fewer pills need to be taken.

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