A New Proportion of Levofloxacin Citrate and Its Impact on the Solubility, Stability, and Potency

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**Abstract:** We recently reported a new salt organic compound derived from levofloxacin (LF) base with citric acid (CA) in the 1:1 molar ratio, enhancing the LF’s stability and potency. Furthermore, considering the side effect of CA on the gastrointestinal tract, in this present research, we reduced the CA dose. A new molar ratio, 2:1, was prepared by solvent-dropped grinding and slow evaporation. Next, the salt formation was confirmed by thermal analysis, X-ray diffractometry, and vibrational spectrophotometry. Single-crystal X-ray diffractometry determined the final structure of the new salt. Next, stability, solubility, and potency tests were performed to investigate the advantage of this new composition of levofloxacin citrate. As a result, levofloxacin-citrate (2:1) - 4.5-hydrate was successfully isolated, characterized, and determined. Like the (1:1) molar ratio reported before, this new salt also improves the chemical stability, solubility 1-2 times, and potency of LF towards *Staphylococcus aureus* and *Escherichia coli* 1.5-2 times. Hence, this new composition can be considered a new candidate for antibiotic-antioxidant preparation, which is more efficient and safer than the previous molar ratio.

**Keywords:** levofloxacin, citric acid, salt, stability, solubility, potency.

Graphical Abstract



References:

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