Effect of Chronic Load of Sodium Citrate and Cola Drinks on Crystal Formation in Malphigian Tubules of *Drosophila*

Introduction and Objective: Cola drink and sodium citrate additive is a popular worldwide commercial drink. We investigated the effect of the above two agents on urolithiasis by means of a new animal model: fruit fly.
Materials and Methods: We used 150 wild type flies in each group of these experiments. Each group was bred in plastic vials. There was 0.5% EG as a lithogenic agents for calcium oxalate crystal formation in Malphigian tubules, sodium citrate and cola as test agents added in the fly medium (wt/vol). Groupings are control, EG only, EG + sodium citrate, EG + cola and cola only group. After 3 weeks, the Malpighian tubules were dissected, removed, and processed for polarized light microscopy examination.
Results: The formation of CaOx crystals in Malphigian tubules were: 11.6% in control, 94.2% in 0.5% EG, 99.3% in cola + 0.5% EG, 55.6% in potassium citrate + 0.5% EG, and 29.6 in sodium citrate + 0.5% EG.
Conclusion: The results indicate that administration of sodium citrate had inhibitory effect on crystal formation and was better than potassium citrate. Cola drink did not inhibit the EG-induced crystal formation rate in this fly model. However, flies are invertebrate animal which may not fully represent mammals. Further studies are warranted to confirm the insect experiment.