water

Use of CdS from Teaching-Laboratory Wastes as a Photocatalyst for the Degradation of Fluoroquinolone Antibiotics in Water

Efraím A. Serna-Galvis [1,2], Yenny Ávila-Torres [3,*], María Ibáñez [4], Félix Hernández [4] and Ricardo A. Torres-Palma [2,*]

[1] Grupo de Investigaciones Biomédicas Uniremington, Facultad de Ciencias de la Salud, Corporación Universitaria Remington (Uniremington), Calle 51 No. 51-27, 050010, Medellín, Colombia; efraim.serna@uniremington.edu.co
[2] Grupo de Investigación en Remediación Ambiental y Biocatálisis (GIRAB), Instituto de Química, Facultad de Ciencias Exactas y Naturales, Universidad de Antioquia UdeA, Calle 70 No. 52-21, 050010, Medellín, Colombia
[3] Grupo de Investigación QUIBIO, Facultad de Ciencias Básicas, Universidad Santiago de Cali, Santiago de Cali, Calle 5 No. 62-00, 760035, Pampalinda, Colombia
[4] Environmental and Public Health Analytical Chemistry, Research Institute for Pesticides and Water (IUPA), University Jaume I (UJI), Avda. Sos Baynat, S/N, 12071, Castellón, Spain; ibanezm@uji.es (M.I.); hernandf@uji.es (F.H.)
* Correspondence: yennytorres@usc.edu.co (Y.Á.-T.); ricardo.torres@udea.edu.co (R.A.T.-P.)

Supplementary

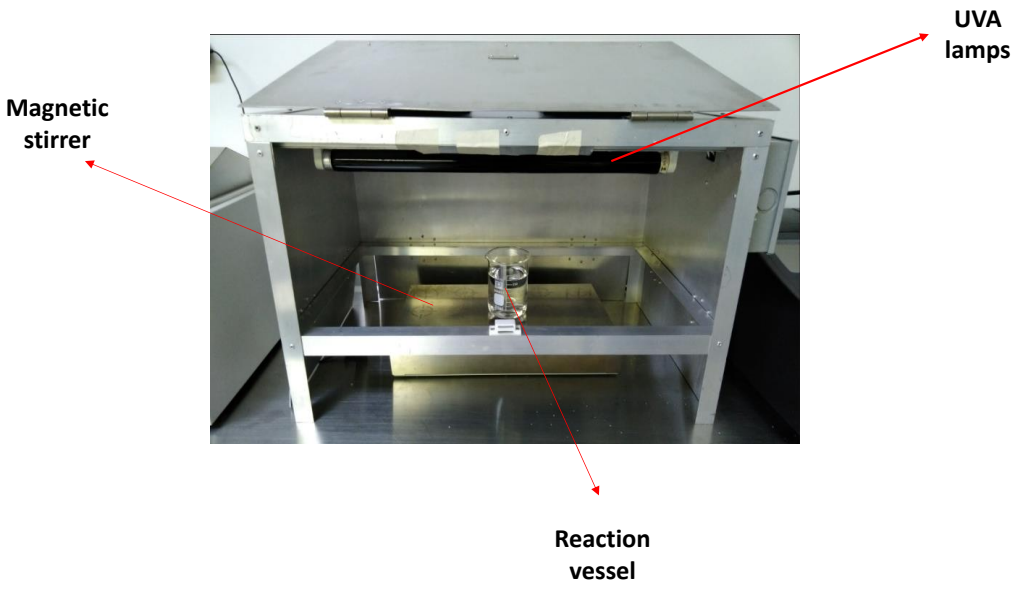


Figure S1. Picture of the reaction system.

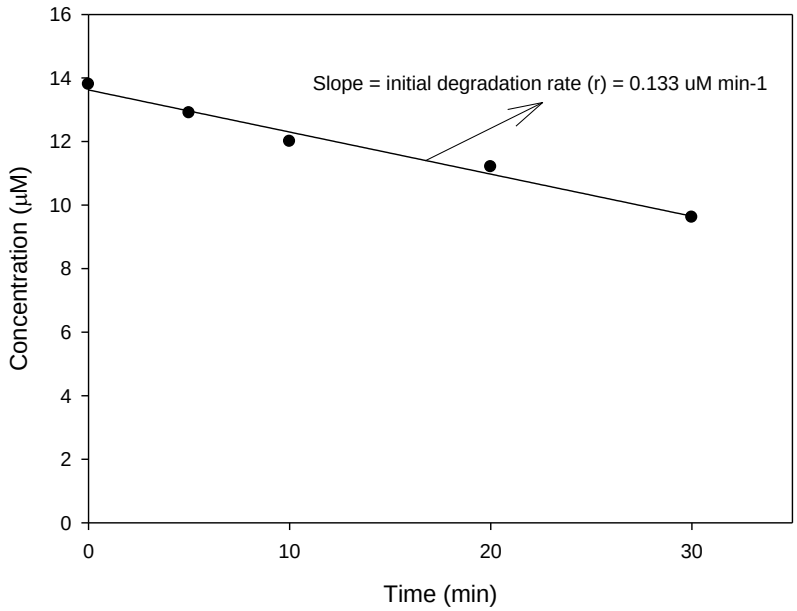
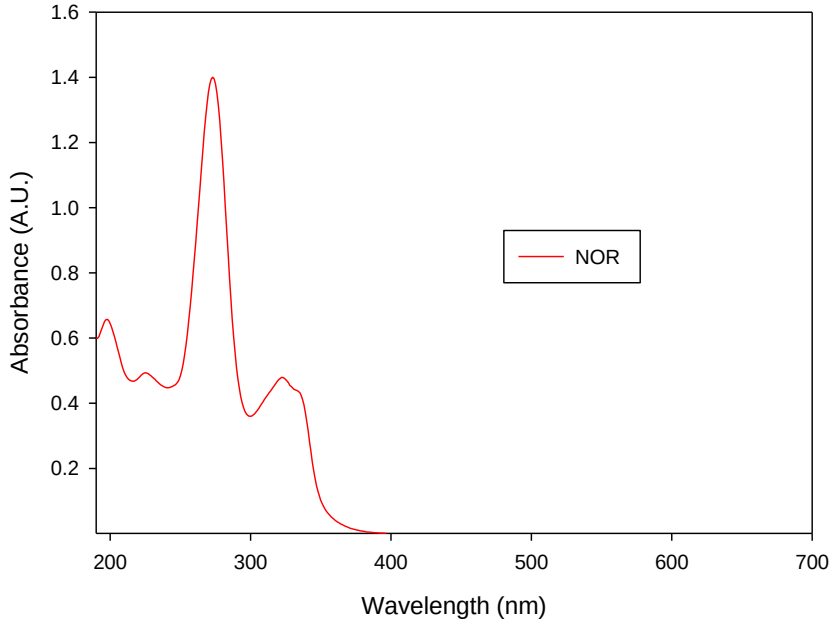
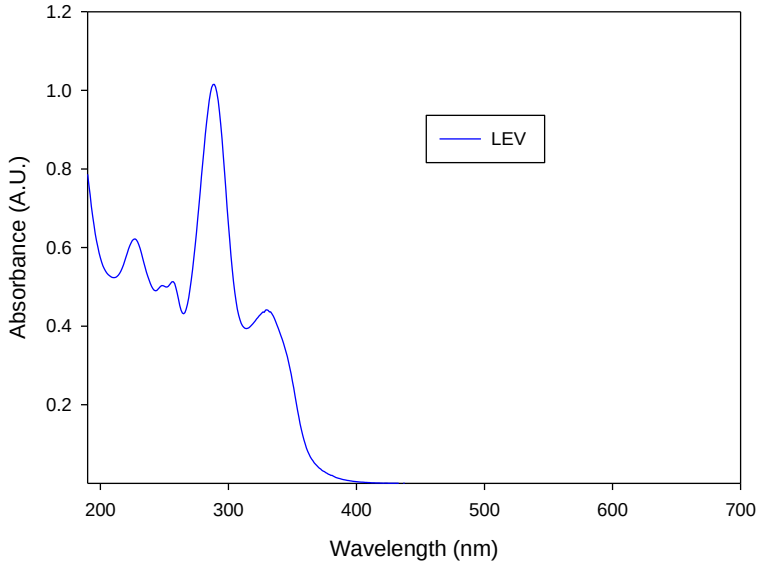


Figure S2. Example of initial rate of degradation (r) determination*. Case of NOR photolysis. Experimental conditions: [NOR]= 13.8 μM, UVA intensity= 40 W m^{-2}, initial pH = 5.3.

Note: *the initial degradation rate (r) is calculated as the plot slope of concentration vs. time, taking the first points.*



(**a**)



(**b**)

Figure S3. UV-Vis Spectra of NOR (**a**) and LEV (**b**).

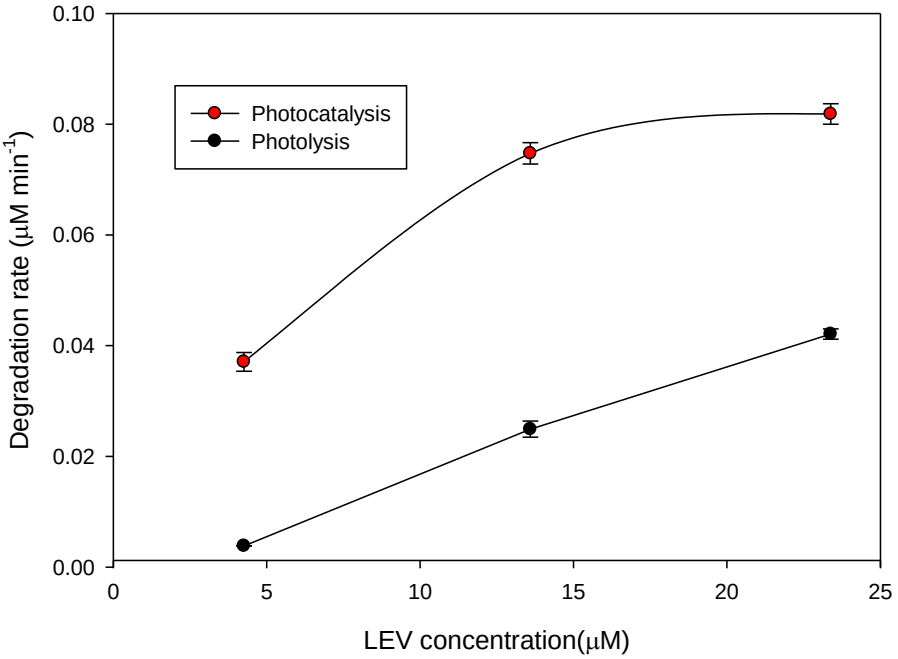


Figure S4. Effect of the pollutant concentration on the degradation of LEV by photolysis (UVA alone) and photocatalysis (UVA/CdS). Experimental conditions: [CdS]= 0.5 g L^{-1}, UVA intensity= 40 W m^{-2}, initial pH = 5.3.

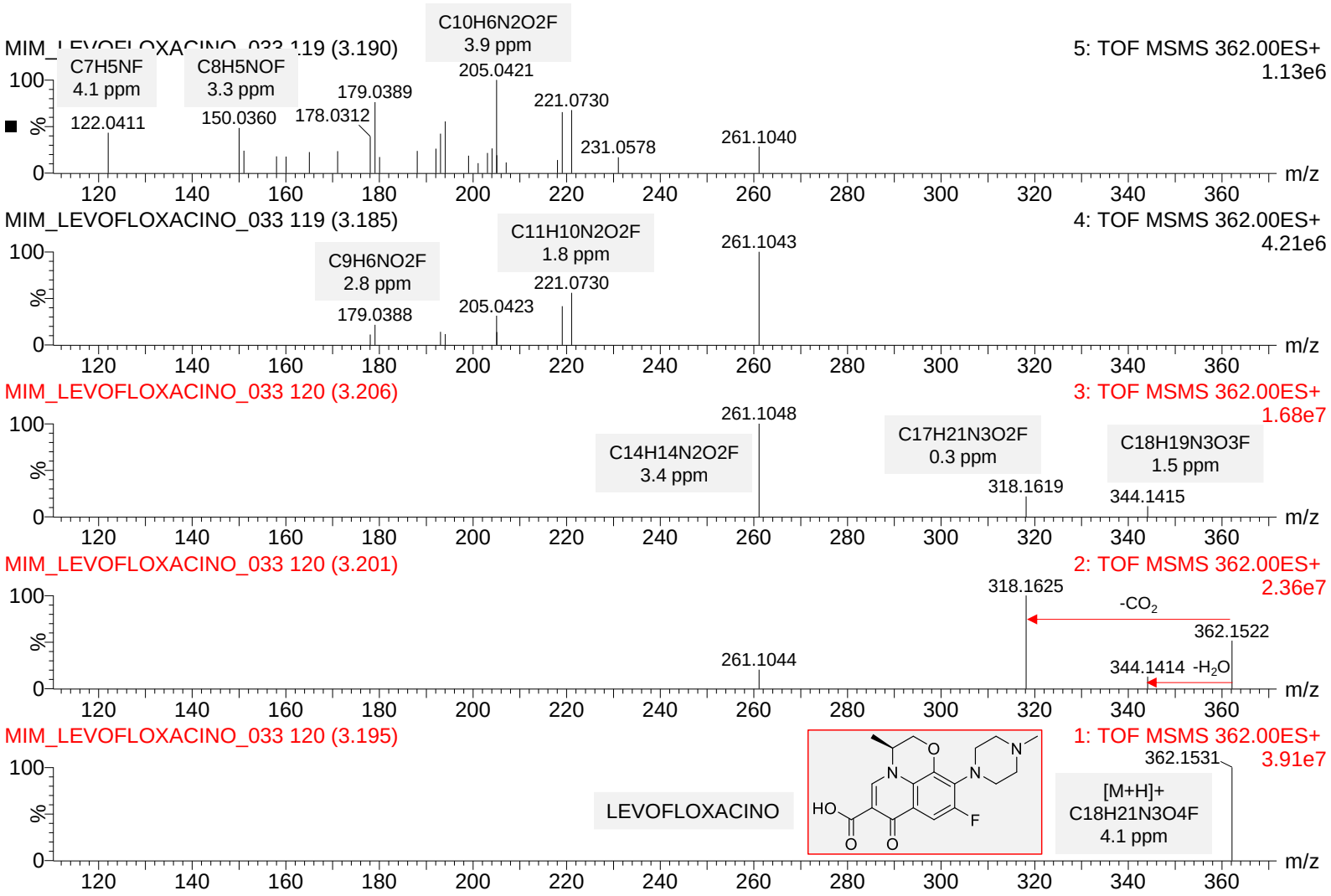


Figure S5. MS/MS spectra obtained for Levofloxacin at different collision energies (from bottom to top: 10, 20, 30, 40 and 50 eV).

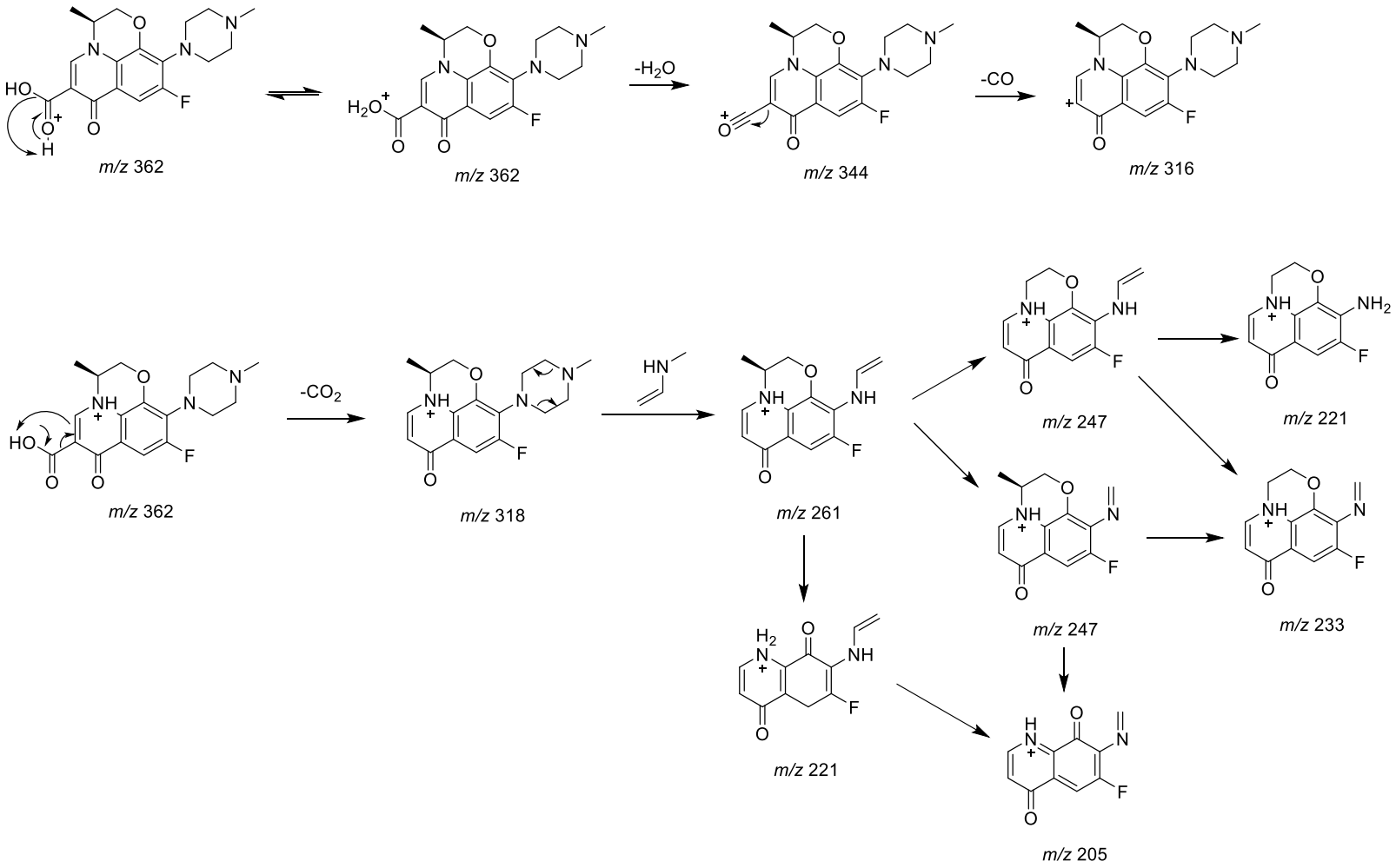


Figure S6. Fragmentation pathway proposed for Levofloxacin.

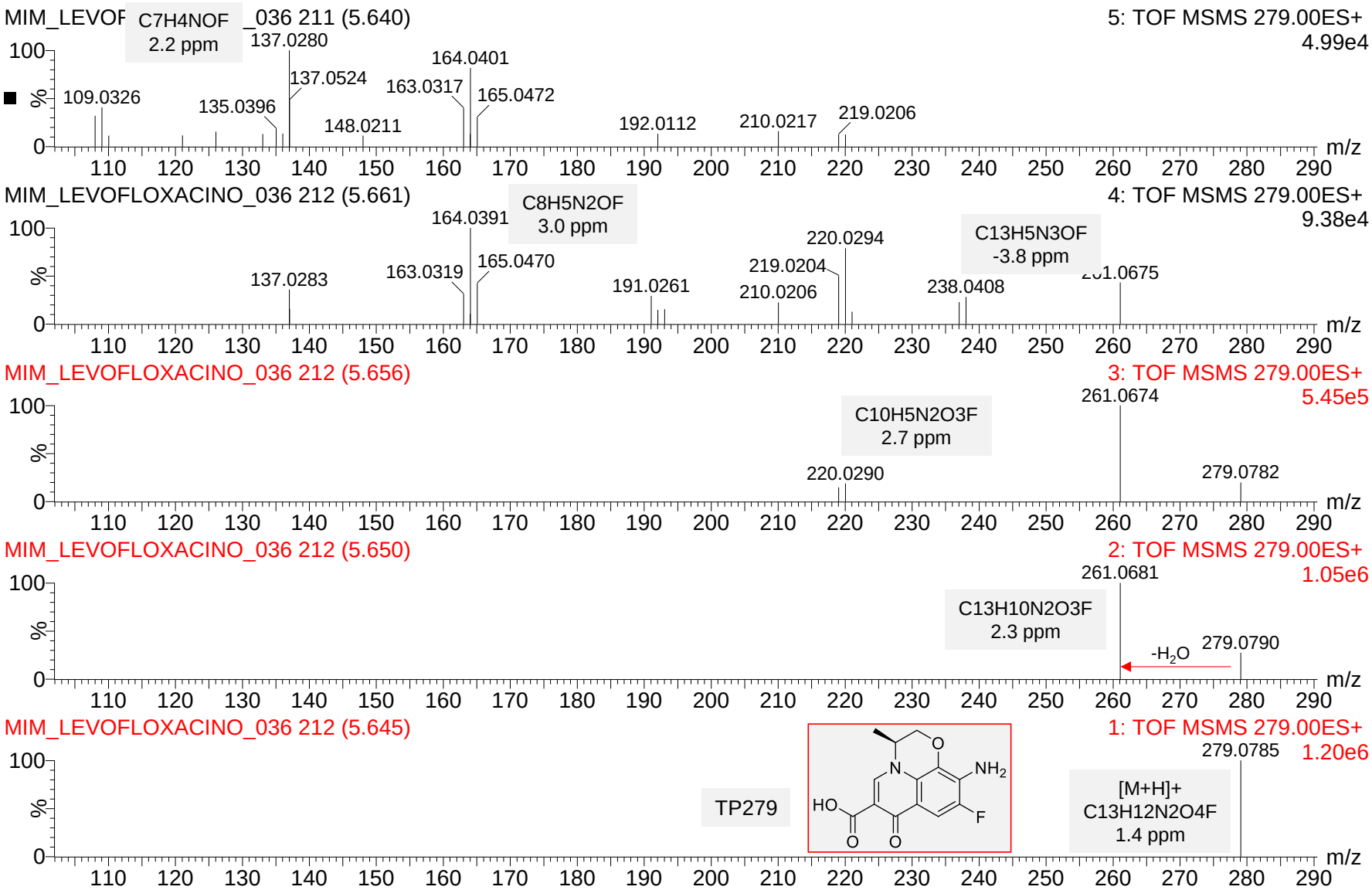


Figure S7. MS/MS spectra obtained for TP279 at different collision energies (from bottom to top: 10, 20, 30, 40 and 50 eV)

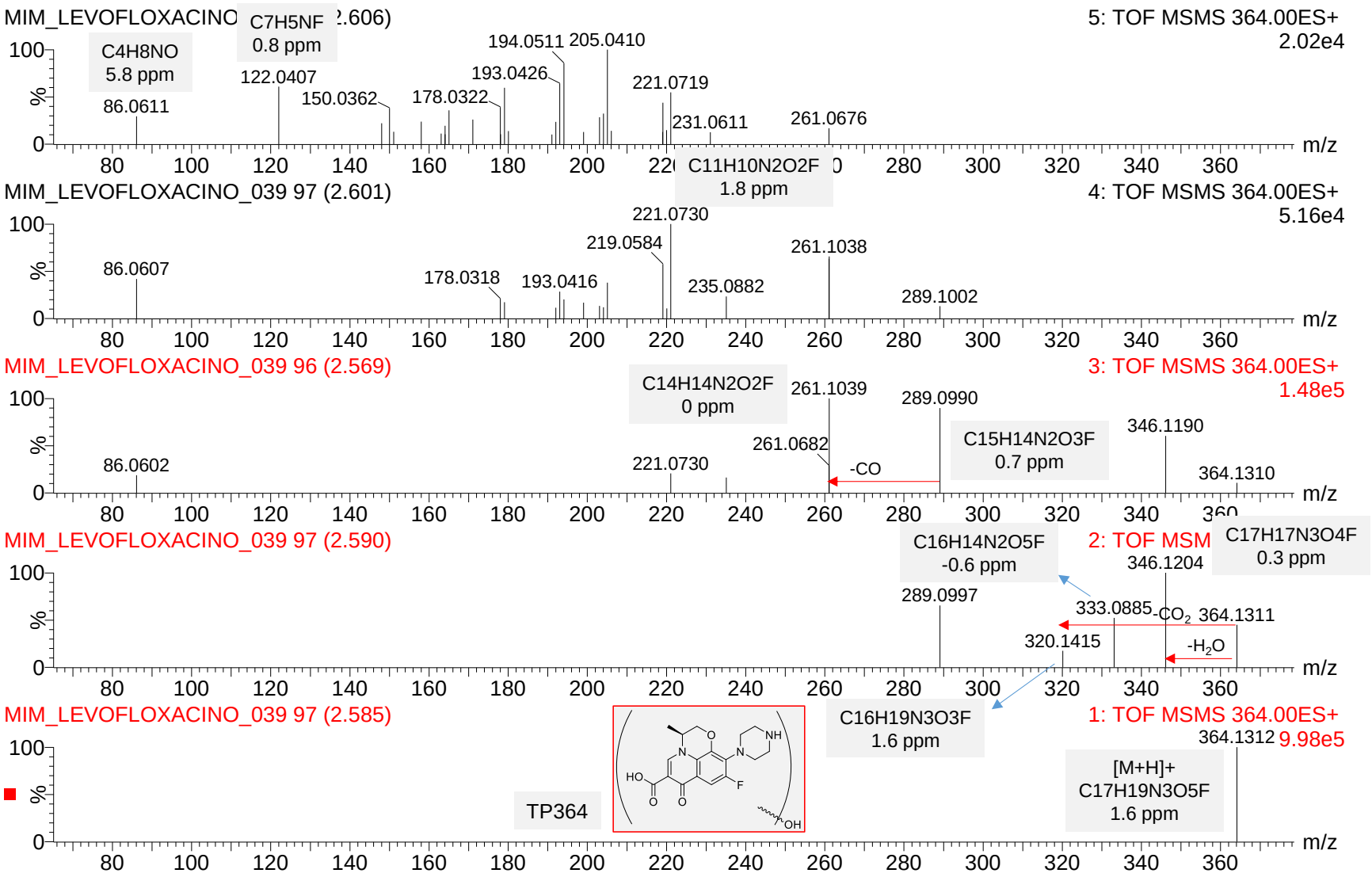


Figure S8. MS/MS spectra obtained for TP364 at different collision energies (from bottom to top: 10, 20, 30, 40 and 50 eV).

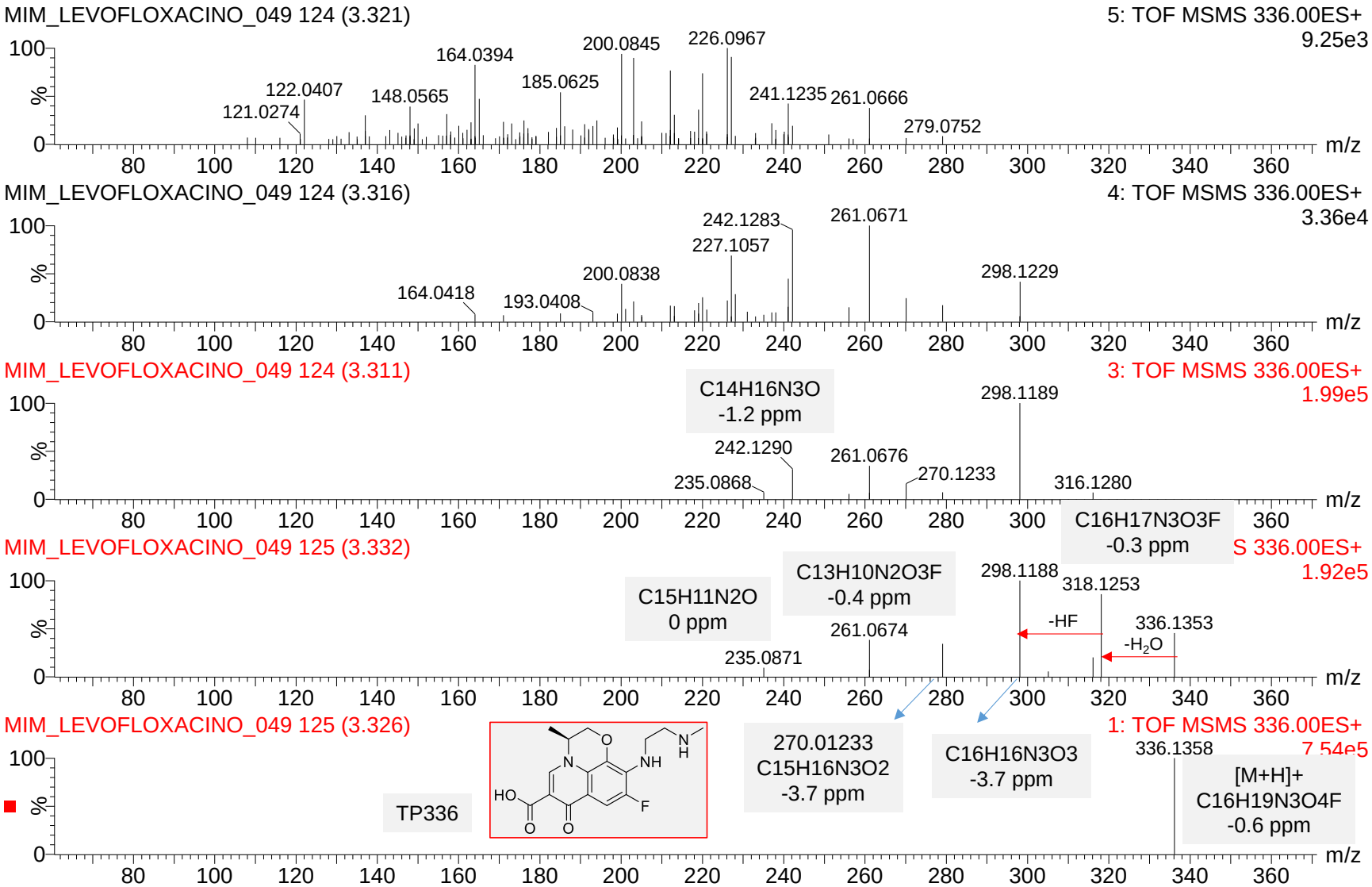


Figure S9. MS/MS spectra obtained for TP336 at different collision energies (from bottom to top: 10, 20, 30, 40 and 50 eV).

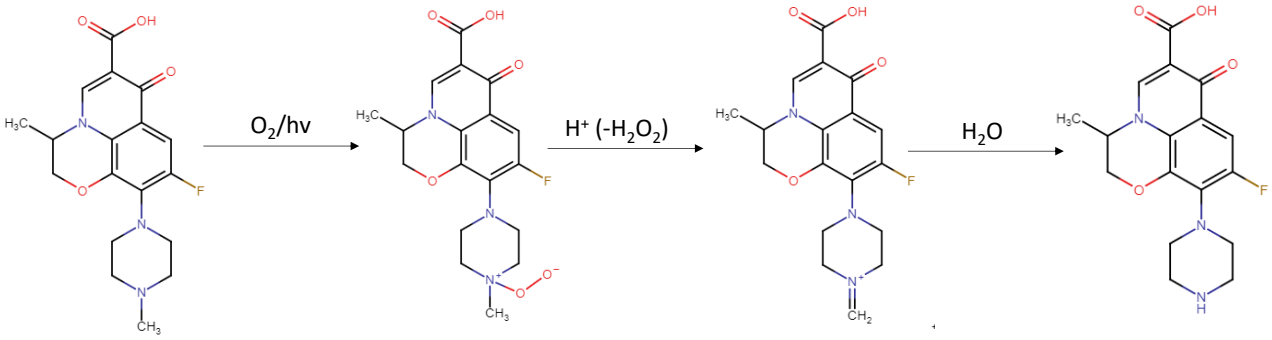


Figure S10. Demethylation of LEV by singlet oxygen or superoxide anion radical.

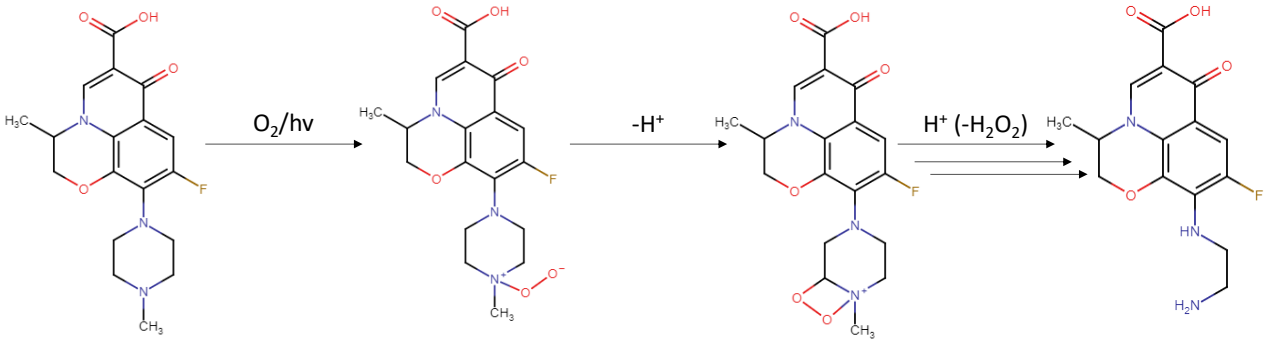
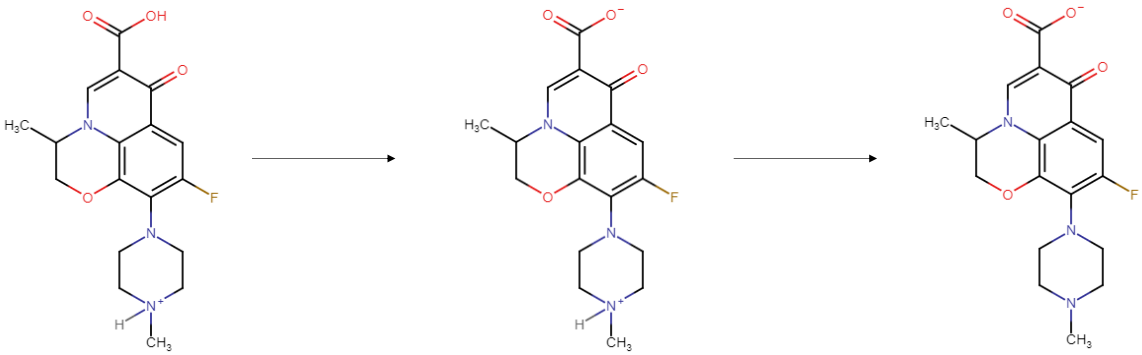
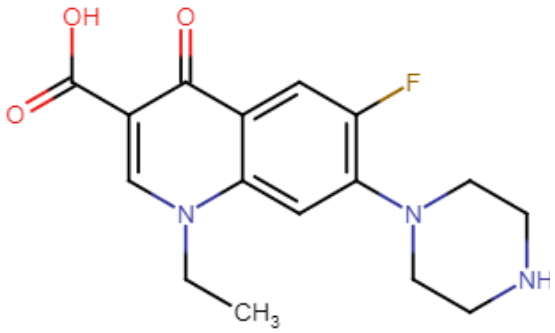
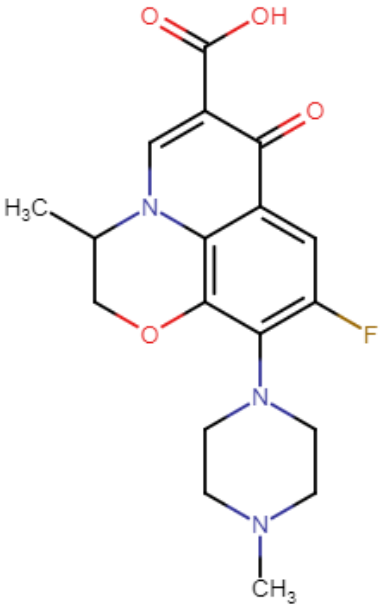


Figure S11. Piperazyl breakdown promoted by superoxide anion radical.



pH 3.0 **pH 5.3** **pH 10.0**

Figure S12. Deprotonation of LEV as the pH is increased.

Table S1. Chemical structures of NOR and LEV.

Norfloxacin (NOR)	Levofloxacin (LEV)