Azithromycin – An Antibiotic to Fight COVID-19?

Significance: Macrolide antibiotics can be used for the treatment of a wide variety of bacterial infections. Unfortunately, the acid lability of the natural product itself, erythromycin A, results in side effects of nausea and stomach-ache. Djokić et al. overcame this problem by replacing the C9 carbon-yl group with an amine functionality. Azithromycin has been used successfully as an antibiotic for many years and recently showed promising effects in a combination treatment with chloroquine to fight COVID-19.

Comment: The semisynthesis of azithromycin was accomplished within a four-step sequence from erythromycin A. Beckmann rearrangement of the O-tosyl oxime afforded a cyclic imino ether intermediate, which, after hydrogenation, yielded the ring-expanded 15-membered heterocycle. Methyl-ation (J. Chem. Res. Synop. 1988, 152) of the secondary amine afforded azithromycin.