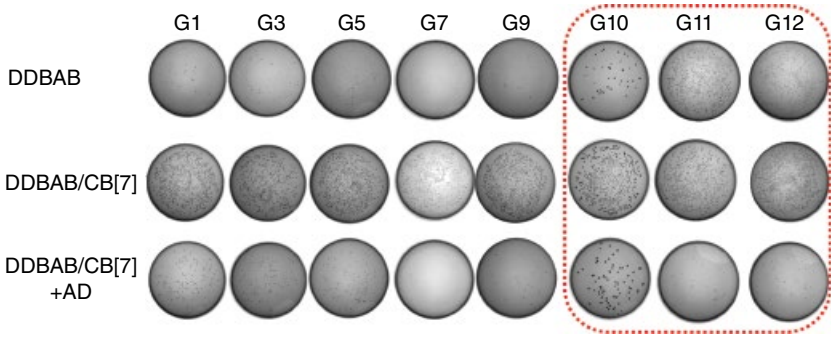
Kumari et al. used the C-alkylresorcin[4]arene (RsC1) (**37**) as the host molecule and the antibacterial gatifloxacin as guest molecule to construct supramolecular bacteriostatic complex (Dawn et al. 2017). The antibiotic-based supramolecular drug also realized high-efficiency inhibition of Gram-negative pathogens. Because the dynamic properties of supramolecular self-assembly process only relies on the well-defined structure and properties of antibiotics and the related host molecules, this strategy does not require any chemical modification on the active site of existing antibacterial agent, which is simple, rapid, but efficient. It also should be noted that, based on the rigorous investigations in Wang's group, antibacterial regulation can also be achieved by supramolecular chemistry strategy (Bai et al. 2015, 2016, 2017b). More importantly, they further proved that the strategy could effectively and precisely treat the multidrug resistance and avoid the rapid appearance of MDR pathogens in 2017 (Bai et al. 2017a). In this work, a series of commercial germicides and cucurbit[7]uril (CB[7]) were employed for constructing supramolecular germicide switches. Their bactericidal activities were controlled reversibly by the self-assembly and disassembly manner between the host and guest molecules. As shown in Scheme 16.12, the selected germicide (dimethyl benzyl ammonium bromide [DDBAB]) killed nearly 100% pathogens in the initial treatment, and the drug-resistant pathogens occurred right after frequently treated with DDBAB in tenth generation. But the supramolecular germicides still contained highly bactericidal activity when needed. The biological analysis demonstrated that the antibacterial regulation strategy could effectively and precisely treat pathogens and avoid the rapid appearance of MDR pathogens. With all the above projects, we should be confident in the supramolecular strategy of modifying antibiotics or constructing antibiotic complexes and rejuvenating the large classes of previously powerful antibiotics.



Scheme 16.12 The plate photographs of *Staphylococcus aureus* treated with DDBAB frequently and those treated with DDBAB/CB[7] complex before and after adding AD for replacement.