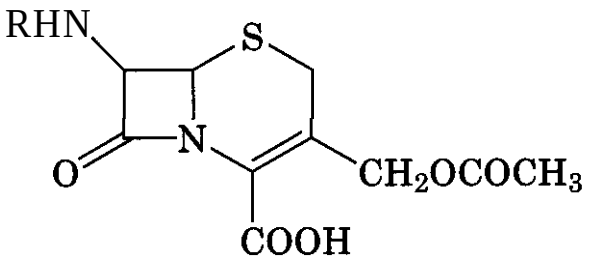
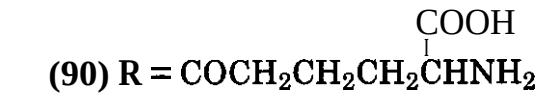
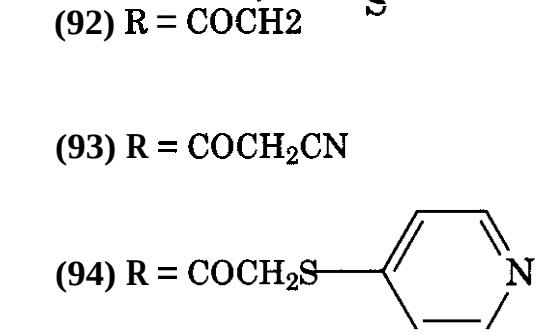
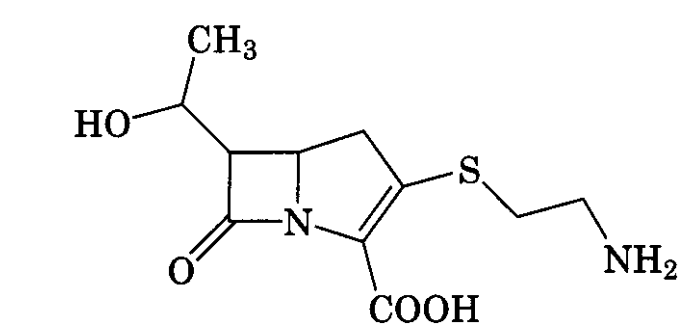
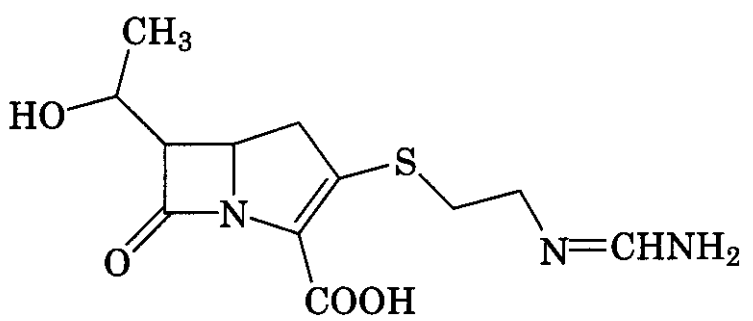








(106)

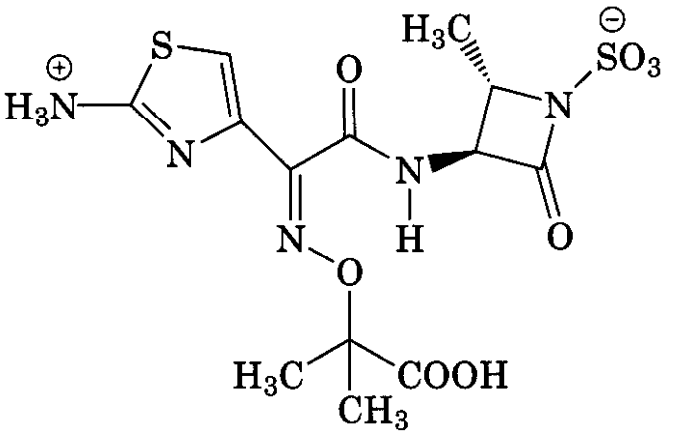


(107)

commercially available monobactam and showed a mode of action similar to that of the other β-lactam antibiotics by blocking bacterial cell wall synthesis (136).

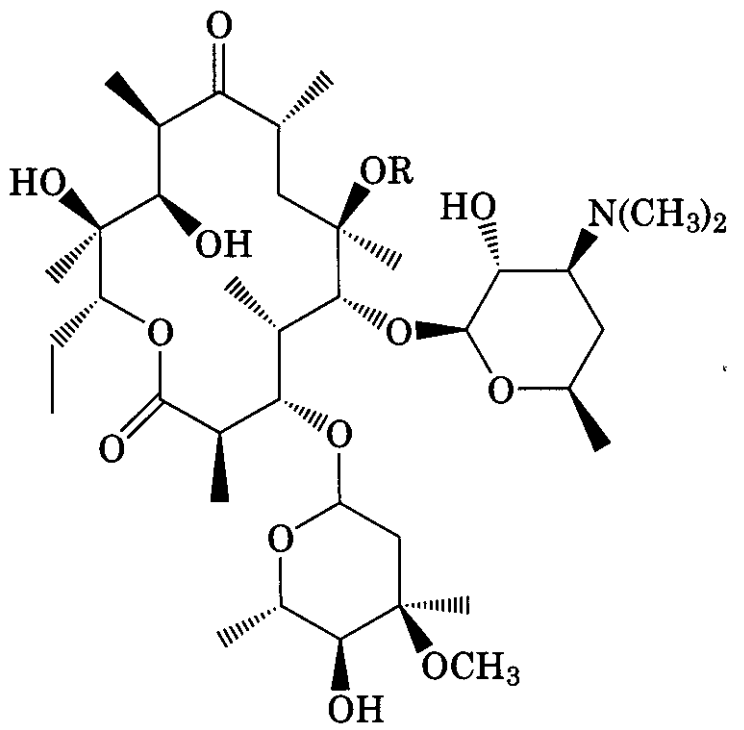
5.2 Erythromycin Macrolides

Erythromycin (109) was isolated, in 1952, from a strain of Saccharopolyspora erythraea



(108)

(formerly Streptomyces erythreus). As a broad-spectrum antibiotic erythromycin has proved invaluable for the treatment of bacterial infections in patients with β-lactam hypersensitivity and is also the drug of choice in the treatment of infections caused by species of Legionella, *Mycoplasma,* Campylobacter, and Bordetella (137).



(109) Erythromycin **A, R** = H
(114) Clarithromycin, R = CH_3

Although safe and effective, erythromycin is not a perfect antibacterial. The presence of hydroxy groups suitably disposed with respect to the keto function at C-9 leads to the formation of a tautomeric mixture of hemiketals (138). The 6,9-hemiketal (110) may be dehydrated in stomach acid to give the inactive Δ_8 analog (**111**), which may undergo further ring closure to give the 9,12-tetrahydrofuran (**112**) that is also inactive (139). The A, derivative