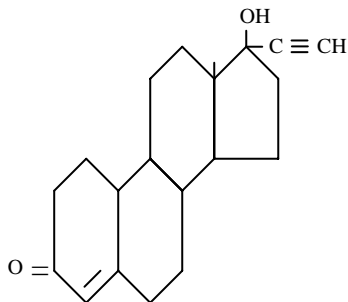


ETHINYL ESTRADIOL



NORETHINDRONE

Figure 4-49. Chemical structures of representative synthetic steroids used in the contraceptive pill. Attachment of an ethynyl group at the C-17 position makes steroids orally-active; this modification protects the molecule from large-scale conjugation during its initial pass through the liver via the hepatic portal vein. Surprisingly, molecules with progestational activity are created when the carbon at position-19 is removed (19-norsteroids) from ethynylated testosterone.