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JOURNAL ARTICLE

Antifertility potential of ornidazole analogues in rats

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In order to determine which part of the ornidazole molecule [1-(3-chloro-2-hydroxy)propyl-2-methyl-5-nitroimidazole] is responsible for its antifertility action, structural analogues were fed to male rats of proven fertility at doses equivalent to the antifertility dose of ornidazole (1.82 mmol/kg/day). The fertility of the males was tested, before oral gavage (control mating) and after 10 and 14 days of feeding, by counting the number of fetuses and corpora lutea present in females 12 days after mating. The day after the last mating, the kinematic parameters of sperm from the cauda epididymidis were assessed objectively with a Hamilton-Thorne motility analyzer. Analogues bearing the 2-nitro and 5-methyl groups on the imidazole ring were inactive if the (chlorohydroxy)propyl group were substituted by proton or methyl, hydroxyethyl, chloroethyl, or (sulfonylethyl)ethyl groups, indicating that the three-carbon side chain of ornidazole was necessary for the antifertility action. Only ornidazole and its acetate were effective antifertility agents, but a compound bearing the (chlorohydroxy)propyl side chain attached to a nitrogen atom of a heterocyclic phthalimide produced a partial but temporary reduction in fertility. Similarities of the action of ornidazole with the male antifertility agent, alpha-chlorohydrin [3-chloro-1,2-propanediol], are discussed.

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