ANTIMOTILITY EFFECTS OF 2-O-METHYL-D-ARABINOSE DIETHYLDITHIOACETAL ON HUMAN SPERMATOZOA

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A wide variety of chemical compounds have been investigated as potential vaginal contraceptive agents (1). In this connection, we have initiated a programme of study to evaluate the sperm immobilizing potential of a series of carbohydrate thioderivatives, since D-glucose diethyldithioacetal has been shown to suppress human sperm motility in vitro (2). In this communication we report the antimotility effects of 2-O-Methyl-D-arabinose diethyldithioacetal (2-Me-D-Ad) on human spermatozoa.

2-Me-D-Ad was synthesised from D-arabinose. Its structure was determined by ^{1}H and ^{13}C NMR spectroscopy and was corroborated by its elemental analysis. Fresh semen samples were collected from healthy donors (25-30 yrs) by masturbation and sperm motility assessments were made under phase contrast microscopy according to the World Health Organization recommended procedure (3).

The results show that 2-Me-D-Ad impaired percentage motility of spermatozoa almost immediately in a dose dependent manner (concentrations tested: 5, 10,25,50 or 100mM). The concentration producing 50% disruption of percentage motility was 16.5 $\pm$ 0.13 mM (mean $\pm$ s.e.m.). In addition, the antimotility effect was essentially irreversible. The precise mechanism/s of the antimotility action remains to be seen, nevertheless, it is possible to rule out some potential mechanisms, such as agglutination of spermatozoa, changes in the fluidity of plasma membrane or their viability. It is suggested that 2-Me-D-Ad impairs spermatozoal motility by binding strongly to some site/s on the plasma membrane possibly through lipophylic domains of the sugar.

References:

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