

GLOSSARY¹

6-chloro-6-deoxy sugars A family of compounds whose action is similar to that of alpha-chlorohydrin in altering the glycolytic pathway in spermatozoa. Toxicity in rats and mice appears to be lower than that of alpha-chlorohydrin.

active immunization Immunity developed following either natural or artificial (i.e., through a vaccine) exposure to antigens.

adjuvant A carrier solution in which an antigen is suspended for delivery to an organism. The adjuvant boosts the body's immune response to the foreign antibody.

alpha-chlorohydrin (synonyms: 3-chloro-1,2-propanediol; U-5897; Epibloc). Chemosterilant for mammals whose effect increases with dosage; causes infertility, sterility, or death in rats, sheep, pigs, but has no effect on mice or rabbits. Depending on dosage, the compound appears to reduce sperm motility, block sperm passage by inducing lesions in the epididymis, or degenerate the germinal epithelium.

antibody Protein compounds (immunoglobulins) produced by plasma cells in response to specific antigens; have the capacity to react against the antigens.

antigen Any substance capable of stimulating an immune response; usually a protein or large carbohydrate that is foreign to the body.

antigenicity Refers to the ability of an antibody to bind to a specific site on a molecule.

BDH 10131 (synonym: 17 α -hexa-1',3'diynyl-1,3,5(10)-trien-17 β -ol). A synthetic estrogen with an effective action lasting up to 6 months. Has been administered orally to both rats and pigeons.

bisdiamine A compound developed for human males but abandoned because of its interaction with alcohol dehydrogenase; currently tested in wolves. Suppresses spermatogenesis but does not effect testosterone production.

buserelin A peptide tested for immunocontraceptive ability; it acts as an agonist of gonadotropin releasing hormone, suppressing pituitary-ovarian function and inducing reversible infertility.

busulfan A cytostatic, alkylating agent which has shown indications of limiting fertility in male and female coyotes in laboratory/pen conditions.

chemosterilant Drug compounds which permanently or temporarily reduce or inhibit fertility in either sex or their offspring.

cumulus oophorus In most eutherian mammals the zona pellucida is surrounded by thousands of cells embedded in mucus. The mucus is synthesized by cumulus cells in the follicle during the hours between the LH surge and ovulation. Spermatozoa must pass through the mucus material to reach the zona pellucida. Oocytes in marsupials are ovulated without a cumulus, but appear to have a functionally similar mucus coating derived in the oviduct.

DES (see diethylstilbestrol)

¹Much of the information presented here is condensed from Bomford (1990).

- diethylstilbestrol* (synonyms: α, α' -diethylstilbenediol; DES). A synthetic estrogen tested for antifertility effects in certain mammals, including grey and red foxes, coyotes, mice, voles, prairie dogs, rabbits, and white-tailed deer. The compound is rapidly metabolized in the body, but is very stable in the environment.
- dimethylstilbestrol* A synthetic compound and potent anti-estrogen related to diethylstilbestrol. Although its action may be slightly different, its effects appear to be similar to those of diethylstilbestrol. This compound was tested briefly in the mid-1960s on mice and rats.
- Epibloc* (see alpha-chlorohydrin)
- GnRH* (Gonadotropic Releasing Hormone) A hormone which controls the release of the gonadotropic ("gonad stimulating") hormones LH and FSH.
- halo-propanediol* A group of compounds related to alpha-chlorohydrin.
- immun contraceptive* A contraceptive designed to raise antibodies in the target animal. These antibodies may prevent reproduction by inhibiting one of several reproductive hormones, or one of the proteins regulating sperm-ova binding.
- immunogenicity* Used to describe the degree of the immune reaction in response to injection of a foreign molecule. The more "foreign" the molecule, the more significant the immune response.
- in vitro* Studies performed on living material outside the organism from which the material was derived.
- in vivo* Studies of whole, living organisms or on whole, intact organ systems therein.
- LH* (Luteinizing Hormone) Produced in the pituitary gland under the stimulation of GnRH. LH regulates the production of testosterone (in a negative feedback system). In the female, LH interacts with estrogens, progesterone, and FSH to produce the menstrual cycle.
- medroxyprogesterone acetate* (synonyms: 17α -hydroxy- 6α -methyl-pregna-4-ene-3,20-dione acetate; Provera). A synthetic progestin steroid which has had limited testing on laboratory rabbits.
- megestrol acetate* (synonyms: 17-hydroxy-6-methylpregna-4,6-diene-3,20-dione acetate; Ovarid). A synthetic progestin steroid that prevents ovulation by inhibiting feedback on the pituitary hormones, and by inhibiting testicular activity in males. Licensed for use in Europe as a population control technique for feral cats, in spite of side effects which affect approximately 1% of the target population.
- melengestrol acetate* (synonym: 17α -hydroxy-6-methyl-16-methylenepregna-4,6-diene-3,20-dione acetate). A synthetic progestin steroid that prevents ovulation by inhibiting feedback on the pituitary hormones, and by inhibiting testicular activity in males. Requires daily dosage when administered orally, but subcutaneous implants reduced fertility in deer and goats.
- mestranol* (synonym: 17-ethynyl-3-methyl ether). An orally active estrogen with a short (6 hour) half life; there is no residue or retention in food chains. The compound has been tested on rats, voles, Richardson's ground squirrel, rabbits, quail, and pigeons. Delivery is problematic as poor bait acceptance due to taste aversion has plagued many experiments.
- metopirone* (synonym: SU-4885). An alkylating compound which acts on the adrenal cortex and interferes with the male reproductive system. The compound induces histological changes which suggest it should produce infertility, but little work on the compound has been reported.
- mibolerone* A synthetic steroid which has been used to inhibit fertility in lions and wolves. However, the compound
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does produce undesirable side effects.

Ornitrol (synonyms: 20,25-diazocholesterol hydrochloride; SC-12937; azocosterol hydrochloride). A non-hormonal chemosterilant for birds which inhibits the synthesis of cholesterol, a component of the egg yolk. Research has also shown that ornitrol disrupts testicular histology and cytology in pigeons when administered during the growth phase. Tested on pigeons, sparrows, and red-winged blackbirds.

passive immunization Occurs when an individual is given antibodies actively produced by another organism. Passive immunity is borrowed immunity, and its effects are not lasting.

pipecolino-methylhydroxindane (synonyms: DL-6-(N- α -pipecolinomethyl)-5-hydroxy-indane maleate; PMHI). A chemosterilant which appears to act through suppression of steroidogenesis; PMHI caused permanent sterility in laboratory rats, but had little effect on caged coyotes.

PMHI (see pipecolino-methylhydroxindane)

porcine zona pellucida Zona pellucida material derived from the macerated ovaries of slaughtered pigs.

Provera (see medroxyprogesterone acetate)

Quinoestrol (synonyms: 17 α -ethynylestradiol 3-cyclopentyl ether; W3566). An estrogenic synthetic steroid which has undergone limited laboratory and field testing on rats. Its effective action involves inhibiting embryo implantation.

RU486 (synonym: Mifepristone). An antigestagen chemosterilant which inhibits ovulation at low doses and induces abortion at higher doses. The compound has been tested for contraceptive applications in wildlife, and shows some possibility as a control technique for free-ranging elephants.

SC-12937 (see Ornitrol)

SC-20775 (synonym: 17 α -ethynyl-11 β -methylestradiol-3-cyclopentyl ether). A synthetic estrogen which reduced fecundity in rats. Side effects and lack of bait acceptance appear to be problematic.

TEM (see triethylenemelamine)

testosterone A male steroid hormone which has been used (as testosterone propionate) in limited laboratory and field trials to inhibit fertility in stallions. The mechanism of action is unknown, and testosterone injected into mares enhanced fertility.

thioTEPA (synonyms: triethylenethiophosphoramidate; tris[1-aziridinyl] phosphine sulphide). A chemosterilant with limited trials to control red-winged blackbird populations.

triethylenemelamine (synonyms: 2,4,6-tris(ethylenimino)-s-triazine; TEM). A chemosterilant which inhibits spermatogenesis through inhibition of meiosis and causes destruction of testicular tissue in dogs and rats. Most work with this compound has been conducted on birds (red-winged blackbirds, grackles, starlings) with indications of limited effectiveness.

U-5897 (see alpha-chlorohydrin)

U-15,646 (synonym: 1,1'-(pentamethylenedioxy) bis [3-chloro-2-propanol]). A compound related to alpha-chlorohydrin, although studies suggest the latter compound to be far more effective in reducing fertility.

W3566 (see quinoestrol)

zona pellucida An extracellular layer surrounding mammalian eggs which remains around the embryo until it hatches in the uterus. The zp has receptor sites that regulate sperm penetration of the egg.

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