Netrin-1 as a Potential Target for Diagnosis and Treatment of Male Fertility and Infertility Associated Disorders

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Technology description

Current State of the Art

Male infertility can range from low or no production of sperm to poor motility in mature sperm. Treatments for male infertility include surgery that can involve removing occlusions that block sperm motility or direct harvesting of the sperm. Medications are used that increase sperm production. These include gonadotropins, testosterone and anti-estrogen fertility drugs like tamoxifen (Nolvadex), clomiphene (Clomid) and bromocriptine .

The only contraceptive choices available for male reproductive decisions are prophylactics, vasectomy and abstinence. Hormonally based contraceptives have been proposed and some repurposed anti-hypertensive, anti-cancer and psychiatric medications are candidates as these resulted in infertility in some patients. Popular opinion leans towards an increase in available forms of contraception for men.

Disadvantages with the Current Art

The most effective treatments for male infertility involve highly invasive sperm retrieval andin vitrofertilization or assisted insemination. Common side effects with steroid or hormonally based therapies are well known and include acne, fatigue, gum pain, hair loss and headache. These also apply for those taking hormones or steroids for contraception or infertility treatments. Although the World Health Organization showed that an increase in sperm production was evident with clomid, there was no increase in pregnancy rate when used for treating male infertility. Bromocriptine results were moderate.

These moderate to poor performances of existing options, a 15-20% infertility rate of couples attempting to conceive (50% due to male infertility) and an increase in public interest for male contraception can lead to the rapid acceptance of novel innovations in this domain.

Advantages

Addition of netrin-1 resulted in:

·Increased sperm motility

·Increased detachment of mature sperm

·Inhibition of netrin-1 and netrin1 signaling
·Inhibited sperm motility
·reduced egg fertilization.

Institution

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