MALE FACTOR INFERTILITY

A relaxin effect on sperm parameters

The relaxin receptor is expressed in the acrosomal region of sperm and is involved in the control of sperm fertilizing ability via a number of different functions, according to a recent study from Italy.

Carlo Foresta and his team at the University of Padova built on previous work on the expression of relaxin in spermatozoa and have further clarified the data regarding the role of relaxin in sperm, which has in the past been contradictory. Their results were published in the *Journal of Andrology*.

Relaxin is a circulating hormone with known roles in female reproductive function, including pregnancy and parturition. It is secreted into semen by the prostate gland and is expressed in sperm; however, the exact localization and role of relaxin in male reproduction has been controversial, owing to contrasting data.

Foresta *et al.* used immunostaining to localize the relaxin receptor, RXFP1, in sperm, finding intense staining in the acrosomal region.

The team then went on to perform functional tests to determine the effect of relaxin on sperm motility, apoptosis, and mitochondrial function. Incubation of sperm with 100 nM relaxin prevented the natural decline in sperm motility that is usually observed, and increased sperm hyperactivity, a marker of capacitation. Furthermore, incubation with anti-RXFP1 antibodies eradicated these effects. When the team investigated the effect of 100 nM relaxin on apoptosis, they found similar results—relaxin incubation prevented apoptosis, an effect

that was significant after only an hour of incubation. Once again, anti-relaxin antibodies blocked this effect.

Relaxin's effect on the acrosome reaction was also investigated. Both 10 nM and 100 nM stimulated the acrosome reaction. At a 3 h time point, the effect of 100 nM relaxin was similar to that seen with 10 μ M progesterone, but at 14 h was higher with relaxin. This observation is particularly interesting, bearing in mind that progesterone is considered the most important physiological factor in the acrosome reaction.

Sperm are exposed to relaxin in the semen and again in the female reproductive tract, where relaxin is produced by the uterus and ovary. This study not only clarifies the role of relaxin in sperm, but could also open avenues of research into its use on fertility treatment.

Annette Fenner

Original article Ferlin, A. *et al.* Effect of relaxin on human sperm functions and fertilizing ability. *J. Androl.* doi:10.2164/jandrol.110.012625

© Ciro Amedeo Orabona | Dreamstime.com