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Human gametes, activation, attraction and transport: A review and a new concept

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Human gametes (oocytes and spermatozoa) have to be activated after quiescence before puberty. Oocytes acquire the ability to fuse with sperm when they reach 20 μm in diameter and they are arrested at the prophase of meiosis II. Only spermatozoa that have passed through the epididymis are mature enough to be capable of motility. In humans, the mature oocyte contains the supporting elements capable of sustaining the development of the embryo, while a primary contribution of the spermatozoon is to provide the centrosome. Movements of the oocyte after release from mature Graffian follicle and catchment by fimbriae of infundibulum helped by tubal fluid, beating cilia and muscular contractility of uterine tube. Gamete activation is also defined as sperm capacitation and oocyte preparation procedures carried out to aid fertilization. The current hypothesis of mammalian gamete binding postulates a set of proteins. The sperm-specific protein, Izumo, is essential for sperm-egg plasma membrane binding and fusion. On the oocyte side, Juno recognizes the sperm Izumo, facilitating fertilization and acts as polyspermy block. Fertilization is far from random. Theories put for mechanisms of attraction, thermal, hormonal, sonic and olfactory. Sperms are attracted toward eggs of their species only. Oocytes control not only the type of sperm they attract, but also the time at which they attract them. We propose a new concept of Electromagnetic Field (EMF) attraction based on the fact that every living cell is an electromagnetic unit. Oscillations of meiotic spindle may generate EMF waves transmitted to and received by sperms.

Biography

Mostafa Kandil has his expertise in human gross anatomy and embryology research. He is interested in studying the ultrastructure of vital organ tissues exposed to biochemical and biophysical hazards namely electromagnetic fields.

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