Prof Dr Johan Smitz

Results from capacitation culture preceding in Vitro Maturation of human oocytes from 2-8 mm follicles in PCOS

A major challenge when applying IVM systems is to overcome the asynchrony in oocyte maturity (nuclear and cytoplasmic) of COC obtained from 2 to 8 mm follicles. The premature resumption of meiosis after oocyte retrieval should be prohibited, while synchronization of nuclear and cytoplasmic maturation should be favoured. In order to achieve this goal, a temporary meiotic arrest, imposed via modulation of the cyclic adenosine monophosphate (cAMP) signalling pathway, has been widely researched in animal models and more recently in human IVM. C-Type Natriuretic Peptide (CNP) added to culture medium can maintain immature oocytes under meiotic arrest via the generation of cGMP in cumulus cells. Work in several animal models and simultaneously in PCOS patients (Sánchez *et al.*, 2017) has led to the development of an efficient pre-maturation system called “capacitation” IVM (CAPA-IVM) from which the first clinical results will be discussed.

Sánchez F, Lolicato F, Romero S, De Vos M, Van Ranst H, Verheyen G, Anckaert E & Smitz JEJ. An improved IVM method for cumulus-oocyte complexes from small follicles in polycystic ovary syndrome patients enhances oocyte competence and embryo yield. Hum Reprod 32, 2056–2068; 2017