

Signals of Seminal Vesicle Autoantigen Suppresses Bovine Serum Albumin-induced Capacitation in Mouse

Sperm

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Abstract

Capacitation is the prerequisite process for sperm to gain the ability for successful fertilization. Unregulated capacitation will cause sperm to undergo a spontaneous acrosome reaction and then fail to fertilize an egg. Seminal plasma is thought to have the ability to suppress sperm capacitation. However, the mechanisms by which seminal proteins suppress capacitation have not been well understood. Recently, we demonstrated that a major seminal vesicle secretory protein, seminal vesicle autoantigen (SVA), is able to suppress bovine serum albumin (BSA)-induced mouse sperm capacitation. To further identify the mechanism of SVA action, we determine the molecular events associated with SVA suppression of BSA's activity. In this communication, we demonstrate that SVA suppresses the BSA-induced increase of intracellular calcium concentration ($[Ca^{2+}]_i$), intracellular pH ($pH(i)$), the cAMP level, PKA activity, protein tyrosine phosphorylation, and capacitation in mouse sperm. Besides, we also found that the suppression ability of SVA against BSA-induced protein tyrosine phosphorylation and capacitation could be reversed by dbcAMP (a cAMP agonist).