

Evidences for the presence of chymotrypsin-like activity in human spermatozoa with a role in the acrosome reaction

Morales, Patricio

Socias, Teresa

Cortez, Jacqueline

Llanos, Miguel N.

The effect of chymotrypsin inhibitors and substrates on the human sperm acrosome reaction stimulated by the human zonae pellucidae or follicular fluid were evaluated. Motile spermatozoa, selected by a Percoll gradient, were incubated at 1×10^7 cells/ml, 37°C , and 5% CO_2 . After 4.5 hr, the chymotrypsin inhibitor TPCK (N-Tosyl-L-Phenylalanine-Chloromethyl Ketone) or the substrate ATEE (N-Acetyl-L-Tyrosine Ethyl Ester) were added for 30 min. Then, four oocytes were added and the percentage of acrosome-reacted spermatozoa on the zona was determined. TPCK and ATEE inhibited the zona pellucida-induced acrosome reaction. The chymotrypsin inhibitors TPCK and chymostatin and the chymotrypsin substrates ATEE, BTEE (N-Benzoyl-L-Tyrosine Ethyl Ester), Succinyl-Ala-Ala-Phe-7-Amido-4-Methyl-Coumarin (Suc-Ala-Ala-Phe-AMC), and Succinyl-Leu-Leu-Val-Tyr-7-Amido-4-Methyl-Coumarin (Suc-Leu-Leu-Val-Tyr-AMC) inhibited the human follicular fluid-induced acrosome reaction. Sperm extracts exhibited hydrolyti