# Recombinant versus bovine hyaluronidase for oocyte denudation before intracytoplasmic sperm injection

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## Background

• The injection of a single sperm into a mature (MII) oocyte represents a crucial step in the ICSI cycle.

• At the time of collection, the oocyte is surrounded by an expanded matrix of cumulus cells that works as a viscous matrix forming the cumulus-oocyte complex (COC).

• The removal of cumulus cells in a process called oocyte denudation is required in order to visualise, grade and manipulate the oocytes before injection.

• Due to the high content in hyaluronic acid, the matrix of the COC is degraded using hyaluronidase.

• The long-established source of hyaluronidase has been represented by bovine testes, but concern has been raised regarding the possible negative effects over the fragile oocytes by mechanisms involving low enzyme purity, variable concentrations, trauma, prolonged exposure and integration of external DNA in the oocyte.

• Objective: to appraise critically the published randomised controlled trials (RCTs) comparing recombinant hyaluronidase with bovine hyaluronidase for oocyte denudation before ICSI.

## Methods

• A comprehensive literature search was performed by two of the present authors using a predefined search protocol based on the PICO Method.

• Medline/PubMed/PMC, Cochrane Central Register of Controlled Trials (CENTRAL), EBSCOhost, ClinicalTrials.gov and Google Scholar from inception until August 2014.

• RevMan 5.2.11, provided by the Cochrane Collaboration, was used for statistical analysis.

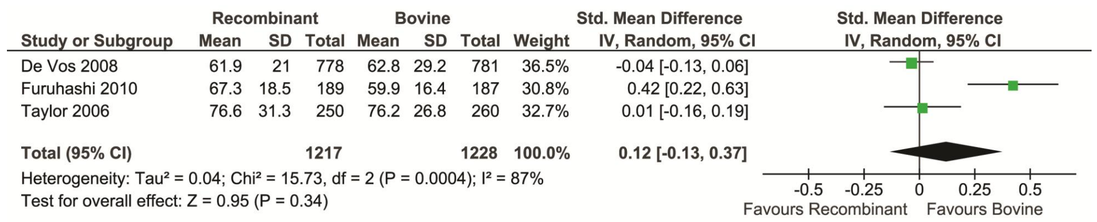
• The Risk Ratio (RR) with a 95% confidence interval (CI) was calculated using the Mantel-Haenszel method for binary data variables and the standardised mean difference (SMD) with a 95% CI was calculated for continuous data variables.

## Results

• 3 RCTs evaluating 2445 oocytes collected from 200 women were included in the systematic review and meta-analysis.

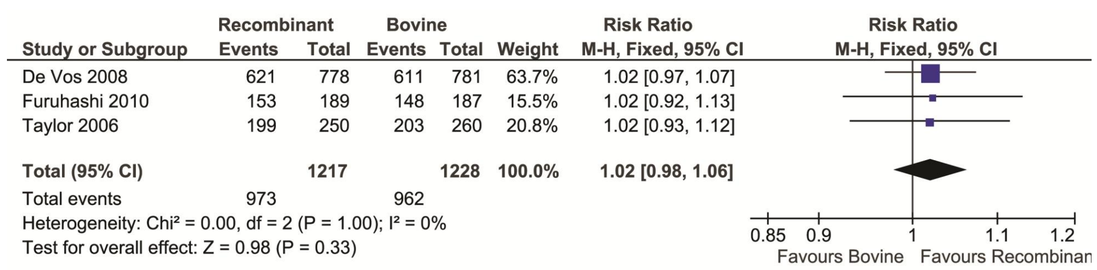
### • Length of time required for oocyte denudation

The length of time required for oocyte denudation was similar between the groups.



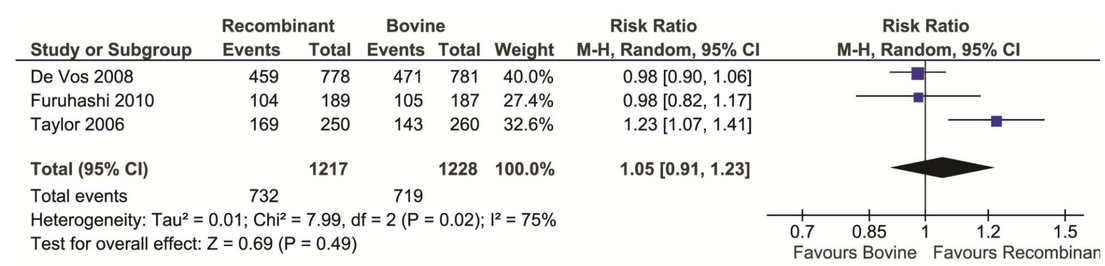

### • MII oocytes obtained for injection

The rate of MII oocytes was similar between recombinant and bovine hyaluronidase.



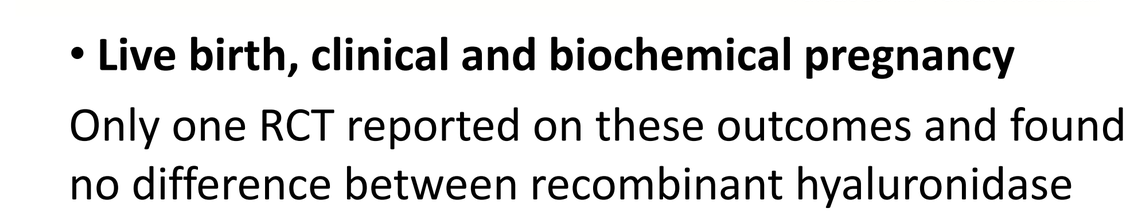

### • Fertilisation rate per oocyte collected

Similar fertilisation rate between the study groups.




### • Rate of good quality embryos per oocyte collected

No statistical difference was observed between recombinant and bovine hyaluronidase.




### • Live birth, clinical and biochemical pregnancy

Only one RCT reported on these outcomes and found no difference between recombinant hyaluronidase and bovine hyaluronidase.

## Conclusion

• This systematic review and meta-analysis based on three moderate quality RCTs provides evidence of equal results between the use of recombinant hyaluronidase and bovine hyaluronidase for oocyte denudation before ICSI.

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