

Journal of Andrology, Vol 20, Issue 3 399-406, Copyright © 1999 by The American Society of Andrology

JOURNAL ARTICLE

Follicle-stimulating hormone and testosterone stimulation of immature and mature Sertoli cells in vitro: inhibin and N-cadherin levels and round spermatid binding

J. Lampa, J. W. Hoogerbrugge, W. M. Baarends, P. G. Stanton, K. J. Perryman, J. A. Grootegeod and D. M. Robertson
Prince Henry's Institute of Medical Research, Clayton, Victoria, Australia.

The in vitro response of Sertoli cells isolated from adult rat testes to testosterone (T) and follicle-stimulating hormone (FSH) treatment was investigated. Sertoli cells from >70-day-old Sprague-Dawley rats were isolated by a combined enzymatic treatment followed by the removal of the majority of contaminating germ cells with immobilized peanut agglutinin lectin. Sertoli cells were then cultured for 6-10 days, forming a confluent layer with a cell viability of >83% and 74-77% purity. The contaminating cells were peritubular cells (4-6%), pachytene spermatocytes (4-5%), round spermatids (<2%), elongated spermatids (<1%), and degenerating germ cells (14.8%). The proportion of degenerating germ cells decreased from 14.8% to 8.6% between days 6 and 10 in culture. After a prestimulation culture period of 4 days, FSH treatment over a 2-day period resulted in a dose-related increase of inhibin with a median effective dose (ED50) value of 36.7±20.4 ng/ml in comparison with an ED50 value of 4.4±0.9 ng/ml obtained with immature Sertoli cell cultures from 20-day-old rats. Mature Sertoli cells, in contrast to immature Sertoli cells, were unresponsive to combined FSH + T treatment for the production of the cell adhesion protein N-cadherin. FSH treatment promoted the in vitro binding of round spermatids isolated from adult testis to adult Sertoli cells in coculture. It is concluded that mature Sertoli cells in culture are responsive to FSH in terms of inhibin production and round-spermatid binding. The lack of an FSH + T-induced increase in N-cadherin or round spermatid binding is attributed to either a reduced sensitivity, or an alteration in the regulation of mature Sertoli cells by FSH + T.

This article has been cited by other articles:



Reproduction

[HOME](#)

T. J Kaitu'u-Lino, P. Sluka, C. F H Foo, and P. G Stanton
Claudin-11 expression and localisation is regulated by androgens in rat Sertoli cells in vitro
Reproduction, June 1, 2007; 133(6): 1169 - 1179.

This Article

- ▶ [Full Text \(PDF\)](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Download to citation manager](#)

Citing Articles

- ▶ [Citing Articles via HighWire](#)
- ▶ [Citing Articles via Google Scholar](#)

Google Scholar

- ▶ [Articles by Lampa, J.](#)
- ▶ [Articles by Robertson, D. M.](#)
- ▶ [Search for Related Content](#)

PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Lampa, J.](#)
- ▶ [Articles by Robertson, D. M.](#)



Journal of Endocrinology

[▶ HOME](#)

P Sluka, L O'Donnell, J R Bartles, and P G Stanton
FSH regulates the formation of adherens junctions and ectoplasmic specialisations between rat Sertoli cells in vitro and in vivo.
J. Endocrinol., May 1, 2006; 189(2): 381 - 395.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of Endocrinology

[▶ HOME](#)

Y Okuma, A E O'Connor, J A Muir, P G Stanton, D M de Kretser, and M P Hedger
Regulation of activin A and inhibin B secretion by inflammatory mediators in adult rat Sertoli cell cultures
J. Endocrinol., October 1, 2005; 187(1): 125 - 134.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Journal of Endocrinology

[▶ HOME](#)

S. J Meachem, S. M Ruwanpura, J. Ziolkowski, J. M Ague, M. K Skinner, and K. L Loveland
Developmentally distinct in vivo effects of FSH on proliferation and apoptosis during testis maturation
J. Endocrinol., September 1, 2005; 186(3): 429 - 446.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



MOLECULAR ENDOCRINOLOGY

[▶ HOME](#)

P. I. Sadate-Ngatchou, D. J. Pouchnik, and M. D. Griswold
Follicle-Stimulating Hormone Induced Changes in Gene Expression of Murine Testis
Mol. Endocrinol., November 1, 2004; 18(11): 2805 - 2816.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



BIOLOGY of REPRODUCTION

[▶ HOME](#)

P. Sluka, L. O'Donnell, and P. G. Stanton
Stage-Specific Expression of Genes Associated with Rat Spermatogenesis: Characterization by Laser-Capture Microdissection and Real-Time Polymerase Chain Reaction
Biol Reprod, September 1, 2002; 67(3): 820 - 828.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)