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## JOURNAL ARTICLE

# Haptoglobin is a Sertoli cell product in the rat seminiferous epithelium: its purification and regulation

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Using multiple HPLC steps, a protein of 67 kDa (estimated by gel permeation HPLC) was purified from Sertoli cell-enriched culture medium that consisted of two dissimilar subunits of 9 (alpha chain) and 24 (beta chain) kDa on SDS-polyacrylamide under reducing conditions. Direct protein sequence analysis of the 9-kDa subunit revealed a sequence of NH<sub>2</sub>-VELGNDATDIEXD, which is identical to the alpha subunit of the rat haptoglobin (Hp). Hp is a 67-kDa tetrameric serum acute-phase protein consisting of two alpha and two beta subunits (alpha<sub>2</sub>beta<sub>2</sub>) of 8.5 kDa and 24.5 kDa, respectively. Using a 351-bp cDNA coding for Hp for northern blots and two Hp primers for RT-PCR, we have demonstrated the expression of Hp in Sertoli and Leydig cells, germ cells, and the testis, but not in the epididymis. In contrast to the hepatic haptoglobin, an acute-phase protein whose steady-state mRNA level increased by as much as fivefold during induced inflammation, the testicular homolog reduced by fourfold within 24 hours following induced inflammation, suggesting that this gene is regulated differently in the testis and in the liver. Moreover, the testicular steady-state Hp mRNA level increased steadily after birth during maturation, suggesting its involvement in spermatogenesis. Using primary Sertoli cell cultures in vitro, it was found that the Sertoli cell Hp expression was not regulated by either FSH, testosterone, estradiol, dexamethasone, interleukin-1beta (IL-1beta), IL-6, interferon-gamma (INF-gamma), transforming growth factor-beta (TGF-beta), lymphocyte inhibitory factor (LIF), or germ-cell-conditioned medium (GCCM). Since transferrin secreted by Sertoli cells is an important molecule in maintaining the crucial iron level necessary for spermatogenesis, the identification of haptoglobin as a Sertoli and germ cell product adds a new member to the growing family of metal transporters in the testis that are likely to play an important role in iron metabolism in the testis.

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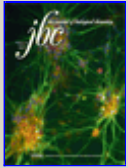


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