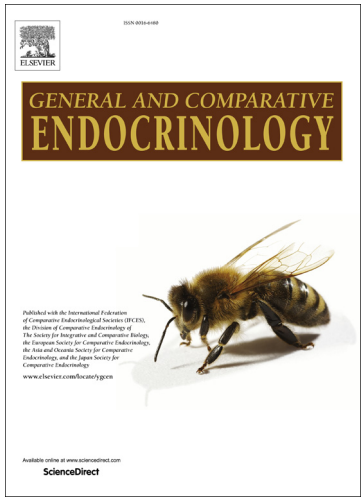

Implication of the estrogen receptors GPER, ESR1, ESR2 in post-testicular maturations of equine spermatozoa

Camille Gautier, Isabelle Barrier-Battut, Isabelle Guénon, Didier Goux, Christelle Delalande, Hélène Bouraïma-Lelong

PII: S0016-6480(16)30151-4
DOI: http://dx.doi.org/10.1016/j.ygcen.2016.05.022
Reference: YGCEN 12410

To appear in: *General and Comparative Endocrinology*

Received Date: 26 April 2016
Revised Date: 18 May 2016
Accepted Date: 20 May 2016

Please cite this article as: Gautier, C., Barrier-Battut, I., Guénon, I., Goux, D., Delalande, C., Bouraïma-Lelong, H., Implication of the estrogen receptors GPER, ESR1, ESR2 in post-testicular maturations of equine spermatozoa, *General and Comparative Endocrinology* (2016), doi: http://dx.doi.org/10.1016/j.ygcen.2016.05.022

Implication of the estrogen receptors GPER, ESR1, ESR2 in post-testicular maturations of equine spermatozoa.

Camille Gautier[1,2,3], Isabelle Barrier-Battut[4], Isabelle Guénon[1,2,3], Didier Goux[1,5], Christelle Delalande[1,2,3], Hélène Bouraïma-Lelong[1,2,3].

[1] Normandie Univ, France.
[2] UNICAEN, EA2608, OeReCa, F-14032 Caen France.
[3] USC-INRA 1377, F-14032 Caen France
[4] Jumenterie du Pin, Institut Français du Cheval et de l'Equitation, 61310 Exmes.
[5] UNICAEN, CMABIO, F-14032 Caen France.

Corresponding author: Hélène Bouraïma-Lelong, helene.bouraima@unicaen.fr, UNICAEN, EA2608, OeReCa, CS14032, F-14032 Caen France, phone number: +33 2 31 56 51 17.

Abstract

Estrogen receptors ESR1, ESR2 and GPER are present on mature ejaculated horse spermatozoa, suggesting these cells as putative targets for estrogens. Indeed, spermatozoa are exposed to high level of estrogens during the transit in the male and female genital tracts but their roles are not investigated. So, we evaluated *in vitro* the role of 17β-estradiol during post-testicular maturations: regulation of motility, capacitation and acrosome reaction. Moreover according to the pseudo-seasonal breeder status of the stallion, we analyzed the putative seasonal variations in the presence of ESRs in spermatozoa. We showed that ESRs are more present on stallion sperm during the breeding season. We showed that capacitation and acrosome reaction are independent of estradiol action in horse. Estradiol can weakly modulate the motility and this effect is strictly associated with GPER and not with ESR1 and ESR2. The subcellular localization of GPER in the neck on stallion sperm is coherent with this effect. It seems that estrogens are not major regulators of sperm maturations associated to mare genital tract, so they could act during the epididymal maturations.

Keywords (6 max)

Estradiol, Sperm motility, Spermatozoa, Stallion, GPER, capacitation.