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ORIGINAL PAPER

The Oxidative Stress, Cryoconservation and Fertility. Aspects of Molecular Oxidation and its Effects on the Reproductive Functions off Ram

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Abstract
The adverse effects of reactive oxygen species on the reproductive function in mammals have been studied for approximately three decades in humans, their connection to infertility being well described in the specialized literature.
The objectives of this study were to increase the degree of understanding of the production mechanisms of reactive oxygen species and of the way in which these induce physiological and molecular alterations in the ram sperm cell, as well as the connection between these alterations and the reproduction physiology in the mammalian sperm cell.

Introduction

The assisted reproduction techniques (ART), especially artificial insemination and *in vitro* fertilization have been used successfully over the recent years to treat human infertility and to optimize the efficiency of animal reproduction.
Artificial insemination offers numerous genetic and economic advantages for the ovine production, being the most secure method for the introduction in the flock of superior genes from individuals lacking specific diseases and with the purpose of increasing the number of products. The method also ensures reproduction outside the natural mating season (September-January), allowing the production of an adequate quantity of milk all year round.
In sheep, the reproduction biotechnologies, which also involve artificial insemination, developed rapidly after the optimization of the methods for the production and preservation of the seminal material and for the estrus synchronization in females. These technologies must take into account the specificity of the ovine species compared to other animal species. The intracervical insemination with fresh semen leads to adequate conception rates, but it is limited by the rather small number of doses that can be obtained at the same time from a male. Moreover, in order to obtain maximum fertility, the insemination must take place within ten hours maximum from the collection of the seminal material, which makes it difficult to apply this technique in large flocks or located at great distances from the collection center. Another specificity