

# Insights into iron and nuclear factor-kappa B (NF- $\kappa$ B) involvement in chronic inflammatory processes in peritoneal endometriosis

Defrère, Sylvie

González-Ramos, Reinaldo

Lousse, Jean Christophe

Colette, Sébastien

Donnez, Olivier

Donnez, Jacques

Van Langendonck, Anne

Endometriosis is a chronic pelvic inflammatory process. Local inflammation is known to play a role in pain and infertility associated with the disease, and may be extensively involved in molecular and cellular processes leading to endometriosis development. In this review, we focus on two inflammatory mediators clearly implicated in the pathogenesis of endometriosis, iron and NF- $\kappa$ B, and their potential association. Iron is essential for all living organisms, but excess iron results in toxicity and is linked to pathological disorders. In endometriosis patients, iron overload has been demonstrated in the different compartments of the peritoneal cavity (peritoneal fluid, endometriotic lesions, peritoneum and macrophages). This iron overload affects numerous mechanisms involved in endometriosis development. Moreover, iron can generate free radical species able to react with a wide range of cellular constituents, inducing cellular damage. Overproduction of reactive oxygen species also impai