

Abstract

Hum Reprod Update. 2008 Jul-Aug;14(4):345-57.

Oxidative stress and antioxidants: exposure and impact on female fertility.

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BACKGROUND: Reproductive failure is a significant public health concern. Although relatively little is known about factors affecting fertility and early pregnancy loss, a growing body of literature suggests that environmental and lifestyle factors play an important role. There is sufficient evidence to hypothesize that diet, particularly its constituent antioxidants, and oxidative stress (OS) may influence the timing and maintenance of a viable pregnancy. We hypothesize that conditions leading to OS in the female affect time-to-pregnancy and early pregnancy loss.

METHODS: We review the epidemiology of female infertility related to antioxidant defenses and oxidation and examine potential sources of OS from the ovarian germ cell through the stages of human pregnancy and pregnancy complications related to infertility. Articles were identified through a search of the PubMed database.

RESULTS: Female OS is a likely mediator of conception and threshold levels for OS exist, dependent on anatomic location and stage of preconception.

CONCLUSIONS: Prospective pregnancy studies with dietary assessment and collection of biological samples prior to conception with endpoints of time-to-pregnancy and early pregnancy loss are needed.

PMID: 18535004

