



Ovarian Toxicity: Current Concepts in Toxicology, Pathology, and Mechanisms

Introduction

The ovary is a multi-function organ responsible for the differentiation and release of a mature oocyte (eggs) for fertilization and for synthesizing and secreting hormones that essential for development of the fertilized egg, menstrual cyclicality, and maintenance of reproductive function. Without the ovary, the human race will not reproduce.

Research

Infertility is a complex disorder with significant medical, psychosocial, and economic aspects. While great strides have been achieved with infertility therapy, evidence-based studies have questioned the validity of historically accepted tests for its diagnosis. Infertility has increased in over the past 30 years. There are more infertile women in the population that seek treatment now than in decades past. The World Health Organization (WHO) estimates that approximately 8–10% of couples experience some form of infertility problem. On a worldwide scale, this means that 50–80 million people suffer from infertility. However, the incidence of infertility may vary from region to region and may be influenced by a wide variety of factors. Market data analysts estimate that the U.S. infertility services (www.marketdataenterprises.com) market reached \$4.04 billion in 2008. In addition to infertility, research into causes of other ovarian diseases and disease prevention has developed significantly during the past two decades. New therapies, methods of early diagnosis and treatment remain at the forefront of ovarian research.

Gaps in Knowledge

There continues to be differences in scientific opinion regarding the influence of drugs and chemicals on the ovarian function. Although there may be an undefined genetic component to ovarian dysfunction, some believe that ovarian dysfunction, and hence infertility and other diseases may be related to environmental influences. The scientific literature does not completely support this opinion. In contrast, there is clear scientific support that the development of therapies can lead to relief of ovarian diseases.

There remains a large gap in scientific knowledge on early detection of ovarian dysfunction, early treatment of ovarian dysfunction and the long-term treatment of other devastating ovarian disease such as cancer. Identifying the mechanisms of ovarian dysfunction is just one but critical step in understanding ovarian structure and function.