



Biochemistry of Prenatal Alcohol Exposure

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This book reviews the biochemical pathways of ethanol and its metabolites in humans in the context of pregnancy. It is intended for obstetricians, gynaecologists, and health professionals working in the field of pregnancy care, aiming to provide answers to the questions as to why and how alcohol consumption during pregnancy is risky for the fetus.

Special emphasis is devoted to the implications for fetal and neonatal development. The review covers primary direct effects of ethanol as well as downstream effector pathways involving modulation of receptor and hormonal signaling, and the enzymatic status of the unborn child. Attention is also given to the effects of maternal alcohol consumption on the status of highly relevant nutrients such as folate, unsaturated fatty acids and zinc.

The book concentrates on the biochemical pathways behind the manifestations of maternal alcohol in the neural development, physiological regulation and the immune competence of the fetus and the neonate. It also discusses the relatively new concept of *in utero* programming of fetal development.

An extensive reference list facilitates up-to-date access to the scientific literature.

Prenatal alcohol exposure can result in the underdevelopment or complete agenesis of that structure, which is composed primarily of myelinated axons, and is therefore extremely vulnerable to ethanol's impact on radial glia progenitor pools. The eighth week after fertilization is the end of the embryonic stage and the beginning of the fetal stage of pregnancy. Foetal Alcohol Spectrum Disorders and Alterations in Brain and Behavior, *Alcohol & Alcoholism* 44 (2009): 108-114. Rubert, Gemma, Rosa Miana, Maria Pascual, and Consuelo Guerri. Ethanol Exposure during Embryogenesis Decreases the Radial Glial Progenitor Pool and Affects the Generation of Neurons and Astrocytes, *Journal of Neuroscience Research* 84 (2006): 483-496. Background: Prenatal alcohol exposure (PAE) can alter the development of neurobiological systems, leading to lasting neuroendocrine, neuroimmune, and neurobehavioral deficits. Although the etiology of this reprogramming remains unknown, emerging evidence suggests DNA methylation as a potential mediator and biomarker for the effects of PAE due to its responsiveness to environmental cues and relative stability over time. Here, we utilized a rat model of PAE to examine the DNA methylation profiles of rat hypothalami and leukocytes at four time points during early development to assess the genome- Antenatal or prenatal alcohol exposure may cause either physical, psychological and/or behavioral disabilities in the newborn, defined as fetal alcohol spectrum disorder (FASD). Fetal alcohol syndrome represents the final stage of FASD. Alcohol consumption. In a systemic review in 2011, researchers investigated alcohol-consuming predictors all over the world based on the population and prenatal settings during pregnancy. The two most common factors for use of alcohol during pregnancy were identified by women who had a higher consumption of alcohol previous to pregnancy and victims of abuse or violence. The other factors that led to alcohol drinking were upper social status referred to as socio-demographic factor and psychiatric indications such as anxiety and depression. *Biochemistry of Prenatal Alcohol Exposure*; Nova Biomedical Books, 2011. [72]. Nava-Ocampo, A.A.; Velázquez-Armenta, Y.; Brien, J.F.; Koren, G. Elimination kinetics of ethanol in pregnant women. Background: It is now widely established that the devastating effects of prenatal alcohol exposure on the embryo and fetus development cause marked cognitive and neurobiological deficits in the newborns. The negative effects of the gestational alcohol use have been well documented and known for some time. However, also the subtle role of alcohol consumption by fathers prior to mating is drawing special attention. Prenatal alcohol exposure can also affect the brain, causing developmental delays and behavioral problems. Delays may express themselves as learning disabilities, attention deficit/hyperactivity disorder, problems with language and memory, or mental retardation. In the behavioral realm, infants may be unusually irritable, present significant sleep or eating problems, or have difficulty tolerating much stimulation.