

## SCIENTIFIC ABSTRACTS

### Alcohol and Lactation

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**Background:** Breastfeeding is the safest and best method for nurturing infant growth and health. While the harmful effects of alcohol during pregnancy are well-established, the consequences of alcohol intake during lactation have been far less examined. The effects of alcohol intake with large amounts noted on the infant include drowsiness, diaphoresis, deep sleep, weakness, decrease in linear growth, abnormal weight gain. Daily consumption of 1 g/Kg alcohol decreases milk ejection reflex. The aim of the present study is to review the literature on the physiological process and hormonal control of lactogenesis, the milk ejection reflex (let down), and the effect of alcohol on these processes in both short and long term.

**Methods:** A systematic literature review was conducted using the electronic databases PubMed, Drugs and Lactation Database (LactMed) and ISI Web of Knowledge from 1999 to 2014. The search terms were "breastfeeding", "lactation" and "alcohol".

**Results:** Alcohol levels in the breast milk are similar to the blood alcohol levels of the mother at the time of feeding. A breastfeeding infant is exposed to a very small amount of the alcohol the mother drinks, but infants detoxify alcohol in their first weeks of life at half the rate of adults. Alcohol is not stored in the breast milk and passed to the infant at a later feeding. A single exposure of alcohol from breast milk may have a mildly sedating effect or alter the odor or taste of the breast milk. It has been recommended to avoid breastfeeding for about 2 hours after drinking one alcoholic beverage.

Excessive use of alcohol can affect milk flow in lactating mothers. Adverse effects on nursing infants include: impaired motor development, changes in sleep patterns, decrease in milk intake, risk of hypoglycemia and slightly reduce milk production

**Conclusion:** Exposure to alcohol in mothers' milk disrupted the infant's sleep-wake pattern and motor development in ways that are contrary to the folklore. Scientific evidences such as that discussed above should not frighten women away from breastfeeding. Clear guidelines for alcohol consumption are required for lactating women and health professionals to guide breastfeeding mothers to make educated choices regarding alcohol intake during this critical period of infant development.

**Keywords:** Breast Feeding; Ethanol; Lactation; Sleep

### Effect of Thymoquinone and Nigella sativa Seeds Oil on Ethanol Toxicity in Rats

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**Background:** In this study, the protective effect of thymoquinone (TQ) and *Nigella sativa* seeds oil (NSO) was evaluated against oxidative damages induced by ethanol in rats.

**Methods:** Animals were treated with ethanol 40% daily by gavages once a day for 4 weeks. NSO and TQ were injected intraperitoneal once a day for 4 weeks. The histopathological examination of liver, kidney, brain and heart was done at the end of 4 weeks. Biochemistry tests such as level of serum liver enzymes (ALT, AST, ALP), triglyceride, cholesterol, LDL, HDL were measured. Malondialdehyde (MDA) level and glutathione (GSH) content in the liver and kidney were also evaluated. The level of specific biomarkers such as TNF- $\alpha$  and IL-6 in liver were measured. Apoptosis was assessed by evaluating the amounts of Bax, Bcl-2, caspase 3, caspase 8 and caspase 9 proteins in liver and kidney tissues by western blotting. Quantitative real-time RT-PCR was used to evaluate the expression of Bcl-2 and Bax.

**Results:** Ethanol-induced hepatotoxicity and nephrotoxicity as evidenced by histopathological damages, and it also increased the level of ALT, AST and ALP. Data showed that MDA level was significantly increased while GSH content was significantly decreased in the liver and kidney of ethanol-treated rats. The levels of TNF- $\alpha$  and IL-6 as specific biomarkers were significantly increased. These effects were associated with increased apoptosis by induction of the expression of Bax/Bcl2 ratio (both protein and mRNA level) and activation of caspase 3, caspase 8 and caspase 9 in liver and kidney. However, the increase in caspase 9 and mRNA level of Bax/Bcl2 ratio in kidney were not statistically significant. The concurrent administration of NSO or TQ and ethanol (3 g/kg) improved the toxic effects of ethanol on kidney and liver.

**Conclusion:** NSO and TQ may prevent ethanol-induced oxidative stress and have protective effects against ethanol-induced toxicity in rat through attenuating lipid peroxidation, increasing GSH content and inhibiting increase of a specific biomarker (IL-6) level. The black cumin and its constituents may reduce apoptosis by modulating Bax/Bcl-2 ratio, and the level of caspase 3, caspase 8 and caspase 9.

**Keywords:** Ethanol; Nigella sativa; Oxidative Stress; Thymoquinone; Toxicity