

Relations between Salt Intake in Mother Mice and Development of Life-Style Related Diseases

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Summary

Blood pressure increases in women during pregnancy because the expectant mother provides nutrients and oxygen to the fetus. Additionally, blood protein concentrations tend to be reduced in expectant mothers with high blood pressure, mothers sometimes show edema with a low protein intake. Supervention of hypertension with edema induces disorders of blood flow control in the brain by changing the circulating blood volume, and induces spasms, disturbance of consciousness, and vision disturbance by compression of the nerve caused by edema. The symptom of hypertension in pregnancy not only threatens the life of the expectant mother, but also induces intrauterine growth retardation of the fetus. Preventing hypertension is important for the expectant mother. Generally, one of the nutritional treatments for preventing hypertension is a reduction in salt intake. However, reduction in salt intake during pregnancy could have adverse developmental effects in the fetus by reducing the circulating blood volume. A recent study suggested that the environment, including nutrients during pregnancy of the mother, induces development of life style-related diseases in the offspring. This hypothesis is known as the theory of Developmental Origins of Health and Disease (DOHaD). However, no studies in humans and animals have examined whether excessive or deficient salt intake during pregnancy induces metabolic abnormalities in the offspring. In this study, pregnant ICR mice were fed a high-salt diet (0.8%), regular diet (0.26%), or low-salt diet until 17 days post-coitus. Subsequently, pups with the mother were fed a regular diet. Pups at 24 days after birth were weaned from the mother and fed a high-fat/high-sucrose diet until 72 days after birth.