

## Dietary salt, insulin resistance and salt-sensitive hypertension: A trio in Dahl salt-sensitive (S) rats

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Insulin resistance initiates a cluster of cardiovascular risk factors that includes hypertension. Insulin resistance, an inherited genetic trait, precedes hypertension in Dahl salt-sensitive (S) rats, and is not present in Dahl salt-resistant (R) rats. The co-existence of insulin resistance and salt sensitivity of blood pressure in Dahl S, but not R rats, made Dahl S rats ideal to elucidate the role of dietary salt as a potential link in exacerbating both phenotypes (insulin resistance and salt sensitivity). Our previous reviews [Shehata, Cardiovasc Diabetol. 2008 Apr 8;7:7 and Jun 21;7:19 2008] highlighted the existence of the insulin resistance trait in Dahl S before the salt-sensitive hypertension trait. We reviewed the enhanced insulin resistance trait in Dahl S rats after 4 weeks of 8% NaCl dietary salt treatment that coincided with suppression in the insulin signaling pathway. An overview of the enhanced oxidative stress and inflammatory responses as manifested by increased levels of TNF-alpha and JNK proteins was demonstrated after high dietary salt treatment. In conclusion, high salt diet contributes a great deal in advancing insulin resistance and salt-sensitive hypertension in Dahl S rats.

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