Hydralazine induces stress resistance and extends lifespan in *C. elegans* via Nrf2/SKN-1 pathway

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Oxidative stress increases gradually with aging and steadily diminishes the cell's ability to maintain homeostasis. Nuclear factor (erythroid-derived 2)-like 2 and its *C. elegans* ortholog, SKN-1, are transcription factors that play a pivotal role in the oxidative stress response, cellular homeostasis and lifespan. But like other defense systems, the Nrf2-mediated stress response is compromised in aging and neurodegenerative diseases. In this study, we provide evidence that hydralazine, a drug used for treatment of hypertension, is a bona fide activator of the Nrf2/SKN-1 pathway. We demonstrate that hydralazine protects Alzheimer's disease model cells and *C. elegans* from chemical stressors linked to neurodegenerative diseases. We also show that hydralazine extends lifespan and health in *C. elegans*. Hydralazine is an FDA approved drug; therefore, we suggest it is an excellent candidate for clinical trials for treatment of age-related disorders. Hydralazine may also offer general health benefits for the aging population.

Speaker Biography

Hamid Mirzaei's research is focused on finding the target of novel and FDA approved compounds using a combination of Proteomics, Computational Biology and Biochemistry. Many FDA approved drugs are currently in use without clear understanding of their mechanism of action. On the other hand there are quite a few well-characterized natural products with unknown targets. His research is focused on understanding the drug's mechanism of action by identifying the target of the drugs and their cellular and organismal phenotypes.

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