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Low Alcohol Beneficial Effects on the Cardiac Function During Cardiac Hypertrophy

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ABSTRACT

Chronic low alcohol exposure has been shown clinically to have beneficial cardiac effects; whereas chronic high alcohol consumption can lead to heart failure. We have previously shown that cardiac inotropy is closely related to the activation of the survival PI3K/Akt.

This study aimed to determine the effects of chronic low and high alcohol on cardiac function as well as to determine if low alcohol can alleviate the development of volume-overload-dependent (shunt) cardiac hypertrophy.

Littermate adult rats were put on a 3-months isocaloric Lieber-Decarli liquid diet with either low alcohol (LA: 5mM) or high alcohol (HA: 100mM) levels. The rats were further divided into sham or shunted group. The measured final blood alcohol concentrations were 0.02% and 0.20% respectively. *In vivo* intra-ventricular catheterization (Scisense/iWorks) of the left ventricle (LV) showed that an improved LV contractility and ejection fraction of the LA group while the opposite occurred with the HA group.

Since we currently do not have all experimental results, our partial results show that shunted rats developed eccentric cardiac hypertrophy as expected, which was exacerbated by high alcohol consumption, whereas low alcohol seems to alleviate the effect of volume-overload on the cardiac function to a certain extent.

The results of the present study suggest that there is an association between alcohol intake and cardiac function; chronic low alcohol exposure seems to have beneficial cardiac effects; whereas chronic high alcohol consumption is associated with reduced cardiac contractile function and could lead to heart failure over the time.

Keywords: Chronic Low Alcohol Exposure, Cardiac Hypertrophy

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