**Calorie restriction decreases apoptosis, mitochondrial oxidative stress and calcium signaling molecular pathways through inhibition of TRPV1 channel in hippocampus and dorsal root ganglion of rats**

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**Abstract**

TRPV1 channel is activated by capsaicin, oxidative stress, acidic pH and heat factors and the factors are reduced by calorie restriction (CR) (Kassab et al. 2017). Antioxidant effects of CR may modulate TRPV1 activity and apoptosis (Verleye et al. 2015). To our knowledge, notification is not available on the effects the frequency of meals and CR on oxidative stress and apoptotic pathways of TRP cation channel-mediated Ca2+ entry in rats. In the current study, we investigated the involvement of FF and CR in apoptosis, mitochondrial oxidative stress and antioxidant levels through TRPV1 activation in rat.

The rats were assignedto control, FF and FF+CR groups. A fix amount of food as ad libitum and two periods were supplemented to the control and FF groups for 20 weeks, respectively. FF+CR group fed a same amount food of control but 20% less calories in same periods. TRPV1 currents, intracellular Ca2+, apoptosis, reactive oxygen species, and mitochondrial depolarization, PARP-1, caspase 3 and 9 activity and expression values were increased in the hippocampal (HIPPON) and dorsal root ganglion neuron (DRGN) by the FF treatment, although the values were decreased by FF+FR treatment. The FF-induced decrease in cell viability and glutathione peroxidase in the HIPPO, DRGN, plasma and kidney were increased by FF+DR treatment, although lipid peroxidation in the samples were decreased.

In conclusion,FF-induced increase of oxidative stress, apoptosis and Ca2+ entry through TRPV1 in the HIPPON and DRGN were decreased by FF+FR treatment. Our findings may be relevant to the etiology and treatment of obesity by the FR treatment.

**Keywords**: Apoptosis; Calorie restriction, Food frequency; Neuron; Oxidative stress; TRPV1 channel.

**References**

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