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## Investigating the involvement of glycogen synthase kinase-3β and gap junction signaling in TRPV1 and remote hind preconditioning-induced cardio-protection

**Puneet Kaur Randhawa** and **Amteshwar Singh Jaggi**
Punjabi University, India

**Introduction:** Remote ischemic preconditioning (RIPC) is the phenomenon that harnesses the body's endogenous protective mechanisms against prolonged ischemia-reperfusion-induced injury.

**Aim & Objective:** The present study aims to explore the involvement of glycogen synthase kinase-3β and gap junction signaling in TRPV1 and remote hind preconditioning-induced cardioprotection.

**Materials & Methods:** In the present study, four consecutive cycles (5 minutes of ischemia-reperfusion) of remote hind limb preconditioning stimulus were delivered using a blood pressure cuff fastened at the inguinal level of the rat. The isolated rat hearts were mounted on the Langendorff's apparatus and were exposed to 30 minutes of global ischemia-120 minutes of reperfusion. Sustained ischemia-reperfusion led to cardiac injury that was assessed in terms of infarct size, LDH release, CK release, LVDP, +dp/dtmax, -dp/dtmin, heart rate and coronary flow rate. The pharmacological agents employed in the present study included capsaicin (10 mg kg-1) as TRPV1 channel activator, AR-A014418 (1 and 3 mg kg-1) as glycogen synthase kinase-3β inhibitor and carbenoxolone disodium (50 and 100 mg kg-1) as gap junction blocker.

**Results & Conclusion:** Remote hind limb, capsaicin and AR-A014418 preconditioning led to significant reduction in the infarct size, LDH release, CK release and improved LVDP, +dp/dtmax, -dp/dtmin, heart rate and coronary flow rate. However, remote hind limb, capsaicin and AR-A014418 preconditioning-induced cardioprotective effects were remarkably reduced in the presence of carbenoxolone (100 mg kg-1). This indicates that remote preconditioning stimulus probably activates TRPV1 channels that may inhibit glycogen synthase kinase-3β activity which subsequently enhances gap junction coupling to produce cardioprotective effects.

### Biography

Puneet Kaur Randhawa is a PhD scholar in the Department of Pharmaceutical Sciences and Drug Research, Punjabi University, Patiala (India). Her key area of research is exploring the molecular mechanisms involved in inducing remote ischemic preconditioning-induced cardioprotection. She has published six research articles and 15 review articles in reputed journals.

randhawa.puneet11@gmail.com

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