Glucagon-like peptide-1 receptor agonists inhibit hepatic stellate cell activation by blocking the p38 MAPK signaling pathway

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ABSTRACT. We investigated the effects of glucagon-like peptide-1 receptor (GLP-1R) agonists on p38 mitogen-activated protein kinase (MAPK) signaling during inhibition of hepatic stellate cell (HSC) activity. Human HSCs were cultured and morphologically identified. HSC samples were collected and randomly divided into three groups (N = 20 samples per group): a control group treated with high glucose (final concentration 25 mM); a GLP-1R agonist group treated with liraglutide (final concentration 5 mM); and a p38-blocked group treated with the p38 MAPK inhibitor SB203580 (final concentration 14 µM). All cells were cultured for 120 h followed by detection of phosphorylated p38 MAPK (p-p38 MAPK) and α-smooth muscle actin (α-SMA, a measure of HSC activation) by western blot. p-p38 MAPK and α-SMA expression levels were both significantly lower in HSCs in the GLP-1R agonist and p38-blocked groups compared with the control group (all P < 0.01). GLP-1R agonists may inhibit the activation of HSCs by blocking the p38 MAPK signaling pathway.

Key words: Hepatic stellate cell; α-smooth muscle actin; p38 mitogen-activated protein kinase signaling pathway; Glucagon-like peptide-1 receptor agonist