1. No.

   2021Y010

2. Title

   The effect of smoking on hepatocyte plasticity and heterogeneity in liver failure

3. Period

   2021-2023

4. Summary

   The liver has remarkable regenerative capacity. The regeneration of the liver was involved in liver diseases. However, the mechanism remains unclear. Recently, it is reported that hepatocyte had plasticity and heterogeneity and mature hepatocyte could dedifferentiate and proliferate. We consider that nicotine which have the effect on nervous system may act on hepatocyte plasticity, heterogeneity, and proliferation. To clarify this, we intend to analyze hepatocyte plasticity and heterogeneity in acute liver injury using single cell RNA-seq technology.

   In the APAP liver injury model mice, we found that a regeneration-specific cell population emerged 48 hours after injury, and that this cell population had a characteristic gene expression pattern compared to other cells. Furthermore, this cell population also showed elevated expression of the nicotinic acetylcholine receptor, Chrna4, suggesting that these cells may be affected by the autonomic nervous system and that smoking may affect liver regeneration.