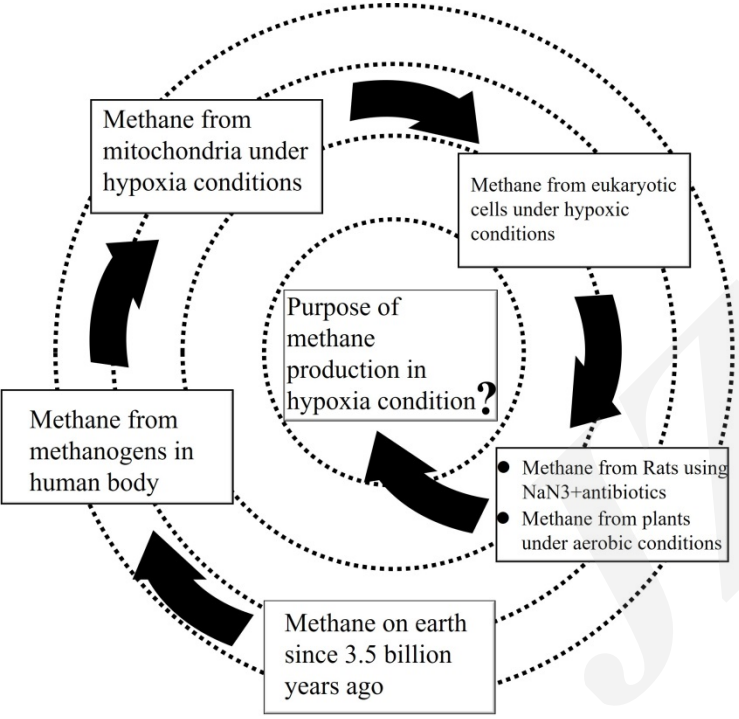
Cite this as: Zhou-heng YE, Ke NING, Bradley P. ANDER, Xue-jun SUN, 2020. Therapeutic effect of methane and its mechanism in disease treatment. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, **21**(8):593-602.
http://doi.org/10.1631/jzus.B1900629

Therapeutic effect of methane and its mechanism in disease treatment

Key words: **Methane treatment, Ischemia and reperfusion injury, Inflammation, Methanogenesis**

Research Summary

This review collected research of therapeutic effects of methane on multiple kinds of disease, explored mechanisms through which methane may act, and discussed the purpose of methane production in hypoxic conditions:

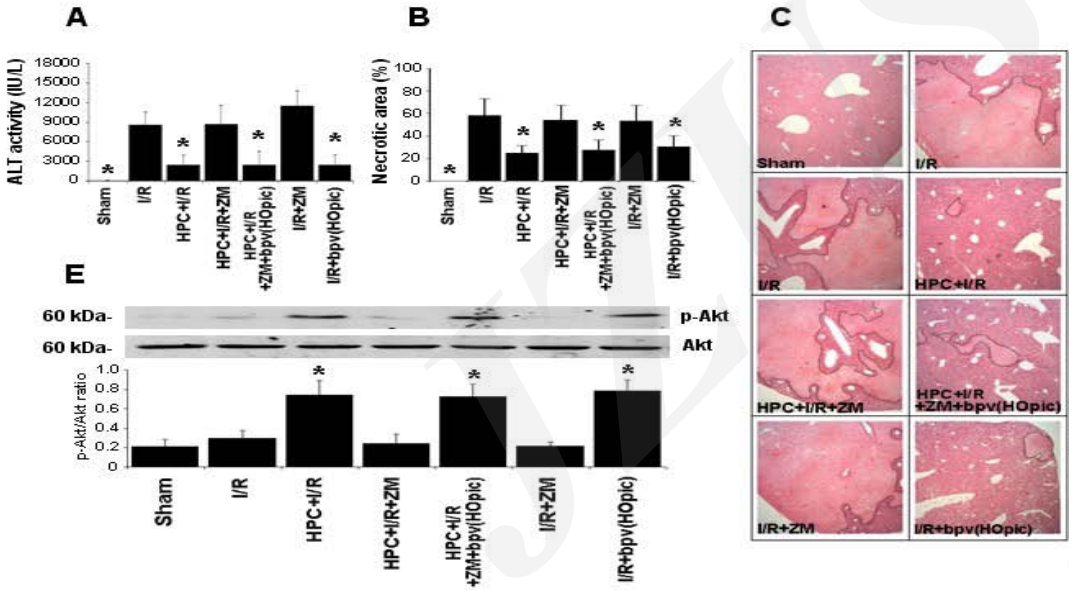


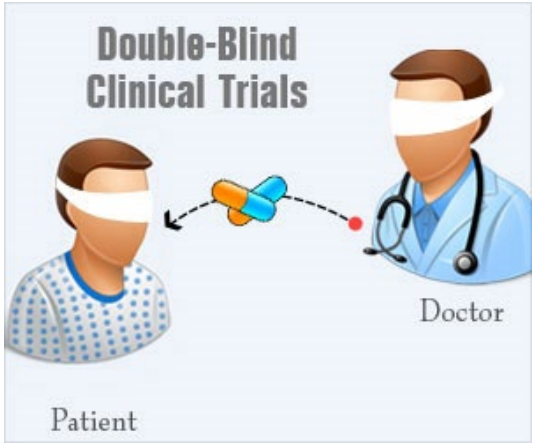
- **Methane is on earth 3.5 billion years ago**
- **Methane has a close relationship with the human body**
- **Methane may have been connected with the human body since the beginning of humankind**
- **Methane could be emitted from mitochondria, eukaryotic cells, rats and plants in anaerobic conditions**
- **What is the purpose of methane production in hypoxic conditions?**

Research Summary

This review also suggested promising research directions for future study:

- **Bench side:**
  - **gene regulation**
  - **methane pill**
- **Clinical research:**
  - **Safety**
  - **Effectiveness**





Picture adapted from: Zhang R., Zhang L., Manaenko A, Ye Z, Liu W, Sun X, 2014. Helium Preconditioning Protects Mouse Liver Against Ischemia and Reperfusion Injury Through the PI3K/Akt Pathway. J Hepatol, 61(5):1048-55. doi: 10.1016/j.jhep.2014.06.020.