Global changes of 5-hydroxymethylcytosine and 5-methylcytosine from normal to tumor tissues are associated with carcinogenesis and prognosis in colorectal cancer

Key words: 5-Hydroxymethylcytosine (5hmC), 5-Methylcytosine (5mC), Prognosis, Colorectal cancer

***Cite this as*:** Yi-ping TIAN, Ai-fen LIN, Mei-fu GAN, Hao WANG, Dan YU, Chong LAI, Dan-dan ZHANG, Yi-min ZHU, Mao-de LAI, 2017. Global changes of 5-hydroxymethylcytosine and 5-methylcytosine from normal to tumor tissues are associated with carcinogenesis and prognosis in colorectal cancer. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, 18(9):747-756.
http://dx.doi.org/10.1631/jzus.B1600314

JZUSB

Research Summary

- **Aim:** To investigate the associations of global levels of DNA methylation and hydroxymethylation in colorectal cancer (CRC) with carcinogenesis and prognosis.
- **Methods:** We used ELISA to quantify global levels of 5hmC and 5-mC and analyzed the their relationships with clinicopathological parameters .
- **Results:**
  - Levels of genomic 5hmC and 5mC were significantly decreased in CRC cancerous tissues (C) compared with corresponding normal tissues (N).
  - High C/N-5hmC ratios were associated with lymph node metastasis.
  - C/N-5mC ratio was an independent protective factor for CRC patients' overall survival.
  - Patients with both a high C/N-5hmC ratio and a low C/N-5mC ratio exhibited the worst survival.

- Higher C/N-5mC ratio associates with longer survival.
- Patients with either high C/N-5hmC or low C/N-5mC ratios tended to have a worse prognosis.
- 5mC and 5hmC can be used as critical markers in tumorigenesis and prognosis estimation.

Innovation points