# 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

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# 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.

# Innovation points

- 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.