

WESTERNIZED DIETS EXACERBATE TUMORIGENESIS BY EXPANDING H₂S-PRODUCING DESULFOVIBRIO IN MURINE MODELS OF ATF6-DRIVEN COLON CANCER

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UEG Week Berlin 2025

Presentation

Digestive Oncology

Gut Microbiota

Immunology

Mechanisms & Personalised Medicine

Colorectal

October 6, 2025

Westernized diets induce colorectal tumorigenesis in ATF6-overexpressing mice through expansion of hydrogen sulfide-producing *Desulfovibrio* bacteria, and scavenging H₂S with bismuth subsalicylate prevents tumor formation.

KEY POINTS

- Westernized high-lard diet induced de novo tumorigenesis in monoallelic nATF6-overexpressing mice that are otherwise tumor-free, and increased tumor burden in biallelic mice.
- Supplementing dietary fiber or lowering fat content failed to protect against the westernized diet-induced tumorigenic phenotype.
- Metagenomic profiling of westernized diet-exposed mice identified increased relative abundance of H₂S-producing *Desulfovibrio* species and genes related to dissimilatory sulfate reduction.
- Transferring microbiota from diet-exposed mice into germ-free nATF6 mice was sufficient to trigger tumorigenesis, demonstrating microbiota-dependent transmissibility.
- Supplementing westernized diets with the H₂S-scavenger bismuth subsalicylate prevented tumor formation in monoallelic mice and drastically altered microbial communities.
- H₂S scavenging significantly reduces diet-induced colonic tumor susceptibility, demonstrating the impact of diet in shaping cancer-related microbiome alterations.

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