

BIFIDOBACTERIUM BREVE-DERIVED EXOPOLYSACCHARIDES PROMOTES T CELL STEMNESS TO POTENTIATE ANTI-TUMOR IMMUNITY IN COLORECTAL CANCER

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Poster

Colorectal

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Bifidobacterium breve-derived exopolysaccharides enhance anti-tumor immunity in colorectal cancer through T cell stemness promotion and synergize with immune checkpoint blockade in preclinical models.

KEY POINTS

- Metagenomic analysis identified marked enrichment of *Bifidobacterium breve* in colorectal cancer patients, and oral *B. breve* administration substantially attenuated tumor progression in murine AOM/DSS-induced colorectal cancer models.
- The immunomodulatory activity resides in heat-stable, high-molecular-weight exopolysaccharides (>3 kDa) that require intact immune competence to exert antitumor effects, as confirmed in immunodeficient versus immunocompetent xenograft models.
- Flow cytometric profiling revealed that *B. breve* intervention enhanced T cell stemness and mitigated T cell exhaustion in tumor infiltrates, with coinstantaneous enhancement of T cell stemness profiles observed across mesenteric lymph nodes, spleen, and tumor sites.
- Exopolysaccharide supplementation synergized with anti-PD-L1 checkpoint blockade, and the authors suggest adjuvant use of *B. breve* polysaccharides could amplify immune checkpoint therapy efficacy.
- This work is relevant to researchers investigating microbiota-immune interactions in cancer and clinicians interested in microbiome-based adjuvant strategies for colorectal cancer immunotherapy.

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