INFLUENCE OF CULTURE MEDIA COMPOSITION ON WNT/B-CATENIN SIGNALING IN APC-MUTATED INTESTINAL ORGANOIDS

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UEG Week Copenhagen 2023 | Poster

Oesophagus

October 16, 2023

Different culture media formulations differentially activate the Wnt/β-catenin pathway in colorectal cancer and FAP patient-derived intestinal organoids, with implications for studying molecular mechanisms of colorectal carcinogenesis.

KEY POINTS

- In organoids from sporadic colorectal cancer normal-appearing mucosa, homemade Wnt3a-conditioned medium with or without R-spondin1 significantly increased CCND1 and c-MYC expression and enhanced intestinal stemness, while commercial Wnt3a-containing medium did not.
- Both commercial and homemade Wnt3a-containing media increased AXIN2 gene expression compared to Wnt3a-lacking media in colorectal cancer organoids.
- In FAP patient organoids, commercial Wnt3a-containing medium was less effective at increasing CCND1 and c-MYC expression, and the induction of AXIN2 and LGR5 was less potent than in sporadic colorectal cancer organoids.
- Western blot confirmed higher activation of WNT signaling with homemade Wnt3a-conditioned medium compared to commercial medium, though media composition did not affect organoid viability or morphology.
- This study is relevant for researchers selecting culture conditions for patient-derived intestinal organoids to investigate colorectal cancer molecular mechanisms.

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