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## Intestinal crypt stem cell senescence and dietary fibre butyrate

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# Intestinal crypt stem cell senescence and dietary fibre butyrate

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## Abstract

Colon's deep crypt pocket i.e. crypt of Lieberkühn provides a confined place that protects stem cells from potentially lethal substances. Dietary products undergo fermentation, the process which is mediated by gut microbiota. Dysmetabolism of it has always been related with colorectal diseases. Extensive transformation in gene expression pattern drives tumourigenesis. However, the interrelation between aberrant epigenomic transcriptome profiles and tumour cells is not well understood. Cell fate status is more responsible for stem cell metabolism than an active regulatory mechanism. Conversely, an ever-increasing data suggests that metabolic pathways not only influence epigenetic modifications but are also interlinked with stem cell associated processes like self-renewal, genealogical commitment and specification. Epigenetic aberrations like RNAs that do not code, DNA methylation, modifications of histones, and chromatin remodelling has an effect on tumour initiation, growth and metastasis. Promotion of cancer stem cell also includes wide range of epigenetic dysregulations. Gene expression during organ development and in altered physiological states like cancer is regulated by Peroxisome Proliferator-Activated Receptor delta (PPAR- $\delta$ ). Irreversible cell cycle arrest mechanisms such as cellular senescence has protective role against cancer. Though, recent discoveries have also established its function in various complex biological progressions like development, tissue repair, aging and age related disorders.

**Key words:** Butyrate, cellular senescence, crypts of Lieberkühn, epigenetic modification, PPAR- $\delta$ , stem cell

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