

P030 Aspirin regulation of DNA repair gene expression in colorectal cancer

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Regular aspirin intake is associated with a reduction in the incidence of colorectal cancer. Aspirin has also been shown to be cytotoxic to colorectal cancer cells *in vitro*. The molecular basis for this cytotoxicity is controversial, with a number of competing hypotheses in circulation. One suggestion is that the protective effect is related to the induction of DNA mismatch repair (MMR) proteins in DNA MMR proficient cells.

To investigate the possible relationship between aspirin exposure and DNA repair, the transcription of 84 genes involved in DNA damage signalling pathways was analysed in the SW480 DNA MMR competent colorectal cancer cell line upon aspirin treatment utilising a commercially available PCR array (SABiosciences Corporation, USA). Treatment of SW480 cells with 1mM aspirin for 48 hours significantly altered mRNA expression of several key genes. Aspirin down-regulated ATR and BRCA1 expression. Increases in the expression of several other genes were seen, including XRCC3 and GADD45 α . Protein expression analysis of BRCA1, XRCC3 and GADD45 α suggests that changes in transcript levels of these genes correlate with changes in protein expression. Our findings suggest that aspirin exposure may have a role in regulating key genes involved in DNA damage signalling pathways.