

**Utility of β -2
microglobulin as a
housekeeping gene
in human cancerous
colorectal tissue**

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Internal controls are used for the estimation of gene expression by techniques such as quantitative real-time PCR. However, recent studies have shown these the expression levels of these housekeeping (HK) genes differ among various tissues or between normal and diseased tissue status. Some investigators reported low expression of β -2 microglobulin (B2M) in colorectal cancer. Other investigators emphasize that since the expression levels of different HK genes depend on the tissue type or experimental conditions, researchers should use several control genes in parallel for certain tissues.

To study mRNA expression levels of Toll-like receptor (TLR) 2 and 4 in sporadic human colorectal cancer tissue and non-cancerous colorectal tissue, we chose three HK genes, β -glucuronidase (GUS), β -actin (BA) and B2M as internal controls. Relative quantification was performed using these three genes separately and simultaneously. Then TLR2 and 4 expression levels were compared between the cancerous colorectal tissue and non-cancerous colorectal tissue specimens.

Our findings demonstrate that consistent data were obtained in most cases when GUS and BA were used as internal controls. When B2M was used as an internal control, analysis of TLR2 and 4 expression showed higher expression in cancerous colorectal tissue than in non-cancerous colorectal tissue. These results may be related to the low level of B2M in cancerous colorectal tissue.