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Expression of MT1 receptor in patients with gastric adenocarcinoma and its relationship with clinicopathological features

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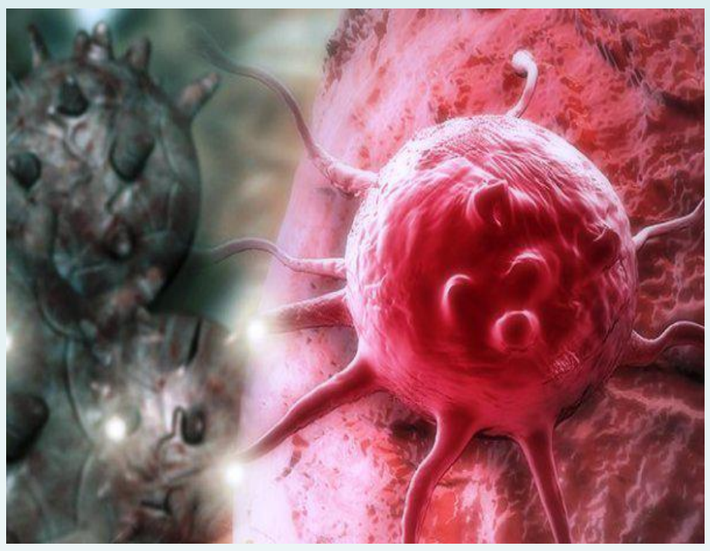
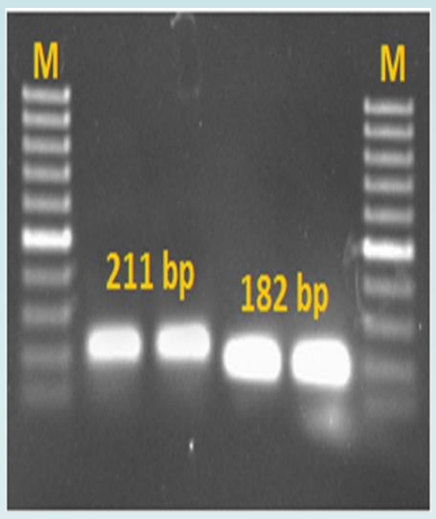
Objectives

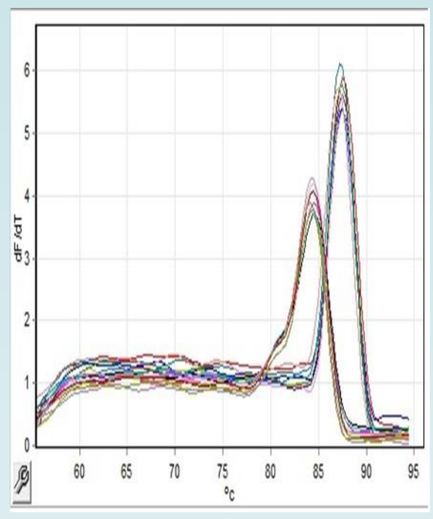
Gastric cancer accounts 8% of the total cancer cases leading to 10% of total cancer deaths worldwide. The indoleamine N-acetyl-5-methoxytryptamine, better known as melatonin, is the principal hormone produced by the pineal gland. Recently, it has been well documented some anti-cancer roles of melatonin in some malignancies as breast and colon cancer; as well as some its protective roles in the GI tract that have been known as free radical scavenger, antimitogenic and apoptotic properties. According to the anti-cancer effects of melatonin, this study initially scheduled to determine the expression of melatonin receptor MT1 in tissue samples of adenocarcinoma cancer patients.

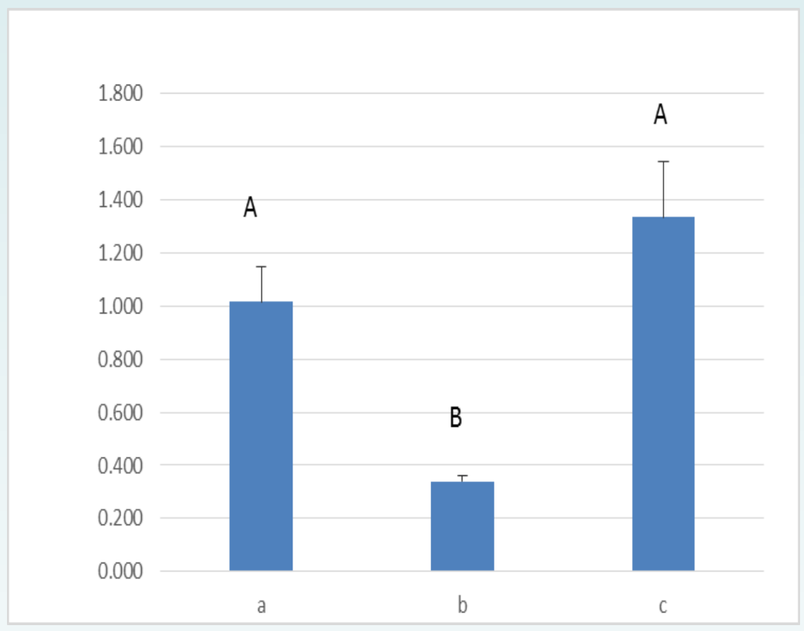


Methods

A total of 10 gastric adenocarcinoma patients and 10 normal individuals were examined for MT1 gene expression by real-time PCR. Additionally, for screening of different alleles of MT1 in our samples, the SSCP-PCR procedure was developed.







: Relative expression of MT1 in tissue samples of non-_tumoral (marginal) (a), normal tissues (b) and tumoral(c) ; A: significant compared with B; P<0.05

Table 5: the relationship between MT1 gene expression and clinicopathological features of patients.

Type of tumor	Sex	Age	Tumor location	Laurens score	Tumor Grade
Tumoral	0.1713*	0.6670*	0.6251*	0.3305*	0.7679*
Non-Tumoral	0.7854*	0.3751*	0.1758*	0.6825*	0.7347*

* No significant P >0.05

Results

Our results have shown interestingly high expression for MT1 receptor in cancer and marginal cancer groups comparing with normal group. Our findings also have shown that a remarkable association between MT1 receptor mRNA levels and grade in individuals over age 50. PCR-SSCP analysis results showed a variation between individuals, which may be effective on their gene expression patterns

Conclusions

In the present study, there is an increasing of MT1 receptor expression in tumoral and non-tumoral (marginal) tissues of gastric adenocarcinoma patients compared to normal individuals while a remarkable difference has not observed between tumoral and marginal (non-tumoral) tissues of the same patient. To explain high expression of MT1 receptor in patients, we can suggest up-regulation of surface melatonin receptors in gastric epithelial cells of tumoral and marginal region of cancer patients is a defending mechanism to response better to the diminished concentrations of melatonin in peripheral tissues. These findings were in agreement with previous results in cervical, breast and colon cancers . On the other hand, the amplicons of gel-electrophoresis analysis in the present study exhibited two unique banding patterns resulting in variations by SSCP analysis, which were in parallel with other polymorphism studies in gastric cancer . Although these genotyping need to more sample size and even finding the actual SNP by direct sequencing technique, this information could confirm the existing of polymorphism in MT1 receptor among individuals which may affect its gene expression. According to our knowledge, for the first time our results showed role of MT1 receptor in gastric adenocarcinoma and demonstrated that melatonin can have a preventive role in gastric adenocarcinoma through MT1 receptor, especially for patients over age 50. Therefore, it can be suggesting melatonin usage in elderly to reduce the risk of gastric malignancy. It is noticed that some complementary studies especially around protein expression of melatonin receptors has been remained to do and to reveal better the mechanism of melatonin.

References

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