COVID-19 Information

Public health information (CDC)

Research information (NIH)

SARS-CoV-2 data (NCBI)

Prevention and treatment information (HHS)

Español

FULL TEXT LINKS

WILEY Full Text Article

J Cell Physiol. 2021 May;236(5):3979-3990. doi: 10.1002/jcp.30150. Epub 2020 Nov 29.

Melatonin impedes prostate cancer metastasis by suppressing MMP-13 expression

Shih-Wei Wang [1 2], Huai-Ching Tai [3 4], Chih-Hsin Tang [5 6 7], Liang-Wei Lin [1 5], Tien-Huang Lin [8 9], An-Chen Chang [5], Po-Chun Chen [10], Yi-Hsuan Chen [1 11], Po-Chuan Wang [12], Yu-Wei Lai [13 14], Shiou-Sheng Chen [14 15 16]

Affiliations

PMID: 33251599 DOI: 10.1002/jcp.30150

Abstract

Prostate cancer has high metastatic potential. Men with higher urinary levels of the sleep hormone melatonin are much less likely to develop advanced prostate cancer compared with men with lower levels of melatonin. Melatonin has shown anticancer activity in experimental investigations. Nevertheless, the therapeutic effect of melatonin in metastatic prostate cancer has largely remained a mystery. Analyses of Gene Expression Omnibus data and human tissue samples indicated that levels of matrix metallopeptidase 13 (MMP-13) expression are higher in prostate cancer patients than in healthy cancer-free individuals. Mechanistic investigations revealed that melatonin inhibits MMP-13 expression and the migratory and invasive capacities of prostate cancer cells via the MT_1 receptor and the phospholipase C, p38, and c-Jun signaling cascades. Importantly, tumor growth rate and metastasis to distant organs were suppressed by melatonin in an orthotopic prostate cancer model. This is the first demonstration showing that melatonin impedes metastasis of prostate cancer by suppressing MMP-13 expression in both in vitro and in vivo models. Thus, melatonin is promising in the management of prostate cancer metastasis and deserves to undergo clinical investigations.

Keywords: MMP-13; MT1 receptor; melatonin; metastasis; prostate cancer.

© 2020 Wiley Periodicals LLC.

Related information

MedGen

LinkOut - more resources

Full Text Sources

Wiley

FOLLOW NCBI

Follow NLM

National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20894

Copyright
FOIA
Privacy

Help
Accessibility
Careers

NLM NIH HHS USA.gov

Research Materials

NCI CPTC Antibody Characterization Program

Miscellaneous

NCI CPTAC Assay Portal