COVID-19 Information
Public health information (CDC) | Research information (NIH) | SARS-CoV-2 data (NCBI) | Prevention and treatment information (HHS) | Español

National Library of Medicine
National Center for Biotechnology Information

Log in

PubMed.gov

Search PubMed
Search
Advanced
User Guide

Save | Email | Send to | Display options

Review > Cancer Chemother Pharmacol. 2012 May;69(5):1213-20.
doi: 10.1007/s00280-012-1828-8. Epub 2012 Jan 24.

The efficacy and safety of melatonin in concurrent chemotherapy or radiotherapy for solid tumors: a meta-analysis of randomized controlled trials

Ye-min Wang [1], Bao-zhe Jin, Fang Ai, Chang-hong Duan, Yi-zhong Lu, Ting-fang Dong, Qing-lin Fu

Affiliations + expand

PMID: 22271210 DOI: 10.1007/s00280-012-1828-8

Abstract

Background: Recently, melatonin has been associated with cancer both in vitro and in vivo. However, the value of melatonin in the treatment of cancer remains disputable. Hence, we performed a systematic review of randomized controlled trials (RCTs) of melatonin in solid tumor cancer patients and observed its effect on tumor remission, 1-year survival, and side effects due to radiochemotherapy.

Methods: An electronic search was conducted using the databases Pubmed, Medline, EMBASE, Cochrane library, and CNKI, from inception to November 2011. Trials using melatonin as adjunct treatment concurrent with chemotherapy or radiotherapy for cancer were included. Pooled relative risk (RR) for the tumor remission, 1-year survival, and radiochemotherapy-related side effects were calculated using the software Revman 5.0.

Results: The search strategy identified 8 eligible RCTs (n = 761), all of which studied solid tumor cancers. The dosage of melatonin used in the 8 included RCTs was 20 mg orally, once a day. Melatonin significantly improved the complete and partial remission (16.5 vs. 32.6%; RR = 1.95, 95% CI, 1.49-2.54; P < 0.00001) as well as 1-year survival rate (28.4 vs. 52.2%; RR = 1.90; 95% CI, 1.28-2.83; P = 0.001), and dramatically decreased radiochemotherapy-related side effects including thrombocytopenia (19.7 vs. 2.2%; RR = 0.13; 95% CI, 0.06-0.28; P < 0.00001), neurotoxicity (15.2 vs. 2.5%; RR = 0.19; 95% CI, 0.09-0.40; P < 0.0001), and fatigue (49.1 vs. 17.2%; RR = 0.37; 95% CI, 0.28-0.48; P < 0.00001). Effects were consistent across different types of cancer. No severe adverse events were reported.

Conclusions: Melatonin as an adjuvant therapy for cancer led to substantial improvements in tumor remission, 1-year survival, and alleviation of radiochemotherapy-related side effects.

FULL TEXT LINKS
SpringerLink FULL-TEXT ARTICLE

ACTIONS
Cite
Favorites

SHARE

PAGE NAVIGATION
Title & authors
Abstract
Similar articles
Cited by
Publication types
MeSH terms
Substances
Related information
LinkOut - more resources

Similar articles

Melatonin as adjuvant cancer care with and without chemotherapy: a systematic review and meta-analysis of randomized trials.
Seely D, Wu P, Fritz H, Kennedy DA, Tsui T, Seely AJ, Mills E.
Integr Cancer Ther. 2012 Dec;11(4):293-303. doi: 10.1177/1534735411425484. Epub 2011 Oct 21.
PMID: 22019490 Review.

Melatonin in the treatment of cancer: a systematic review of randomized controlled trials and meta-analysis.
Mills E, Wu P, Seely D, Guyatt G.
J Pineal Res. 2005 Nov;39(4):360-6. doi: 10.1111/j.1600-079X.2005.00258.x.
PMID: 16207291 Review.

Regional intra-arterial vs. systemic chemotherapy for advanced pancreatic cancer: a systematic review and meta-analysis of randomized controlled trials.
Liu F, Tang Y, Sun J, Yuan Z, Li S, Sheng J, Ren H, Hao J.
PLoS One. 2012;7(7):e40847. doi: 10.1371/journal.pone.0040847. Epub 2012 Jul 18.
PMID: 22815840 Free PMC article. Review.

Ganoderma lucidum (Reishi mushroom) for cancer treatment.
Jin X, Ruiz Beguerie J, Sze DM, Chan GC.
Cochrane Database Syst Rev. 2012 Jun 13;(6):CD007731. doi: 10.1002/14651858.CD007731.pub2.
PMID: 22696372 Updated. Review.

Maintenance chemotherapy for ovarian cancer.
Mei L, Chen H, Wei DM, Fang F, Liu GJ, Xie HY, Wang X, Zou J, Han X, Feng D.
Cochrane Database Syst Rev. 2010 Sep 8;(9):CD007414. doi: 10.1002/14651858.CD007414.pub2.
PMID: 20824860 Updated. Review.

See all similar articles

Cited by 38 articles

Melatonin inhibits lipid accumulation to repress prostate cancer progression by mediating the epigenetic modification of CES1.
Zhou L, Zhang C, Yang X, Liu L, Hu J, Hou Y, Tao H, Sugimura H, Chen Z, Wang L, Chen K.
Clin Transl Med. 2021 Jun;11(6):e449. doi: 10.1002/ctm2.449.
PMID: 34185414 Free PMC article.

Melatonin and neuroblastoma: a novel therapeutic approach.
Pourhanifeh MH, Kamali M, Mehrzadi S, Hosseinzadeh A.
Mol Biol Rep. 2021 May;48(5):4659-4665. doi: 10.1007/s11033-021-06439-1. Epub 2021 Jun 1.
PMID: 34061325 Review.

The Time for Chronotherapy in Radiation Oncology.
Bermúdez-Guzmán L, Blanco-Saborío A, Ramírez-Zamora J, Lovo E.
Front Oncol. 2021 May 11;11:687672. doi: 10.3389/fonc.2021.687672. eCollection 2021.
PMID: 34046365 Free PMC article.

Melatonin in Cancer Treatment: Current Knowledge and Future Opportunities.
Talib WH, Alsayed AR, Abuawad A, Daoud S, Mahmod AI.
Molecules. 2021 Apr 25;26(9):2506. doi: 10.3390/molecules26092506.
PMID: 33923028 Free PMC article. Review.

Risks and benefits of antioxidant dietary supplement use during cancer treatment: protocol for a scoping review.
Wieland LS, Moffet I, Shade S, Emadi A, Knott C, Gorman EF, D'Adamo C.
BMJ Open. 2021 Apr 13;11(4):e047200. doi: 10.1136/bmjopen-2020-047200.
PMID: 33849858 Free PMC article.

See all "Cited by" articles

Publication types

- Meta-Analysis
- Review
- Systematic Review

MeSH terms

- Antineoplastic Agents / adverse effects
- Antineoplastic Agents / therapeutic use*
- Antioxidants / adverse effects
- Antioxidants / therapeutic use
- Combined Modality Therapy
- Humans
- Melatonin / adverse effects
- Melatonin / therapeutic use*
- Neoplasms / drug therapy*
- Neoplasms / pathology
- Neoplasms / radiotherapy
- Radiation Injuries / epidemiology
- Randomized Controlled Trials as Topic
- Remission Induction / methods
- Survival Rate

Substances

- Antineoplastic Agents
- Antioxidants
- Melatonin

Related information

MedGen
PubChem Compound
PubChem Compound (MeSH Keyword)
PubChem Substance

LinkOut - more resources

Full Text Sources
Springer

Other Literature Sources
The Lens - Patent Citations

Medical
ClinicalTrials.gov
MedlinePlus Health Information

NCBI Literature Resources MeSH PMC Bookshelf Disclaimer

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