

Beneficial Effects of Turkey Tail on Colorectal Cancer Treatment

Based on 5 peer-reviewed articles

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Turkey Tail Mushroom

Turkey tail is a polypore(*genus of Fungi*) mushroom that resembles the tail feathers of turkey



Scientific name: “*Trametes versicolor* – also known as *Coriolus versicolor* and *Polyporus versicolor*”, has several colors

It grows on logs and stumps of deciduous trees

It found throughout the world

Chinese Traditional Medicine has been using Turkey Tail to enhance longevity & health-promoting properties for thousands of years (Zhicheng He et al., (2022)



Colorectal Cancer (CRC), *in short Colon Cancer*

CRC is the second leading cause of malignant tumor-related deaths

Third most diagnosed cancer type worldwide

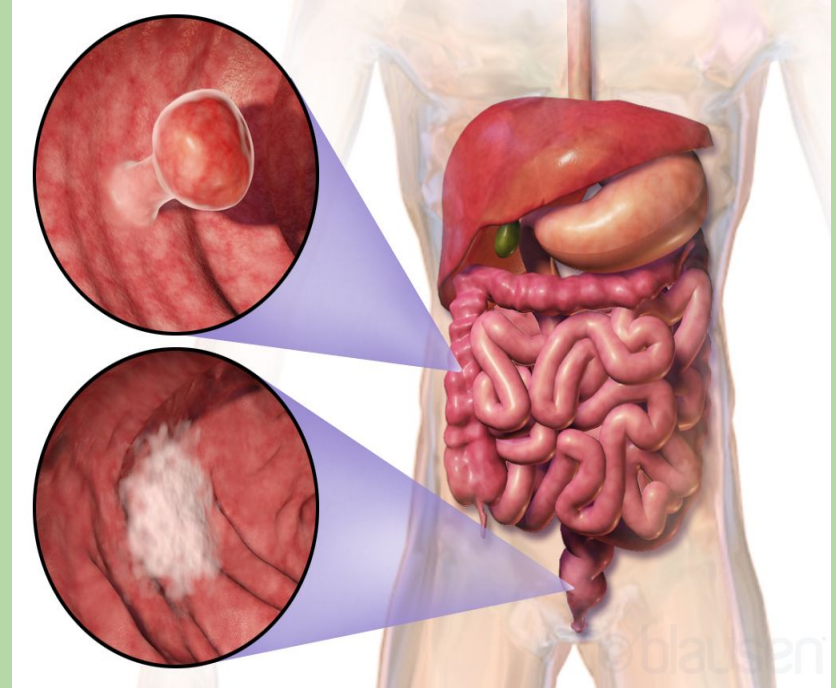
Therefore, prevention, diagnosis, and treatment should be continuously studied

CRC affects the lower part of the GI tract

- The colon is a large intestine or the large bowel
- Rectum is the passageway that connects the colon with the anus

Abnormal growth on the wall of the colon, called *polyps*, overtime polyps may turn into cancer

Therefore, screening is recommended after the age of 45 (Siegel et al., 2024)



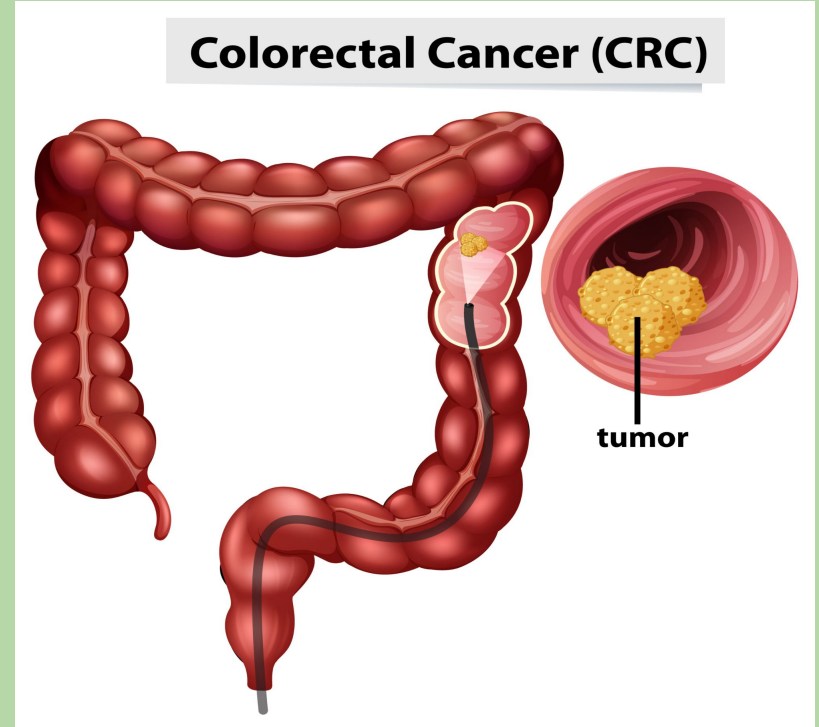
Risk Factors and Treatment of CRC

Risk Factors:

- Age
- Family history (2-3x)
- IBS: Crohn's Disease & Ulcerative Colitis
- Lifestyle factors
- Lack of PA
- Diet (processed meat)
- Overweight/Obesity
- Alcohol/Tobacco

Currently, CRC treatments include:

- Surgery
- Chemotherapy
- Radiotherapy
- Natural products and their derivatives play role in chemotherapy



Polysaccharide-Peptide from *Trametes versicolor*: The Potential Medicine for Colorectal Cancer Treatment , Zhicheng He et al., (2022)

This paper summarised the research progress on *Trametes versicolor* polysaccharide peptides' anti-colorectal cancer activity and related developments.

Yang et al(1992) found that components of *Trametes versicolor types* such as polysaccharide Krestin (PSK) and polysaccharide peptide (PSP)

Wang et al (1996) discovered that glycopeptide PSP inhibited mice sarcoma cells

Ying He et al (2021) isolated a novel molecule polysaccharide peptide called “*Musarin*”

These components have been used in cancer treatments in Japan and China

Polysaccharide Peptide Induced Colorectal Cancer Cells Apoptosis by Down-Regulating *EGFR* and *PD-L1* Expression, Jian et al., 2022.

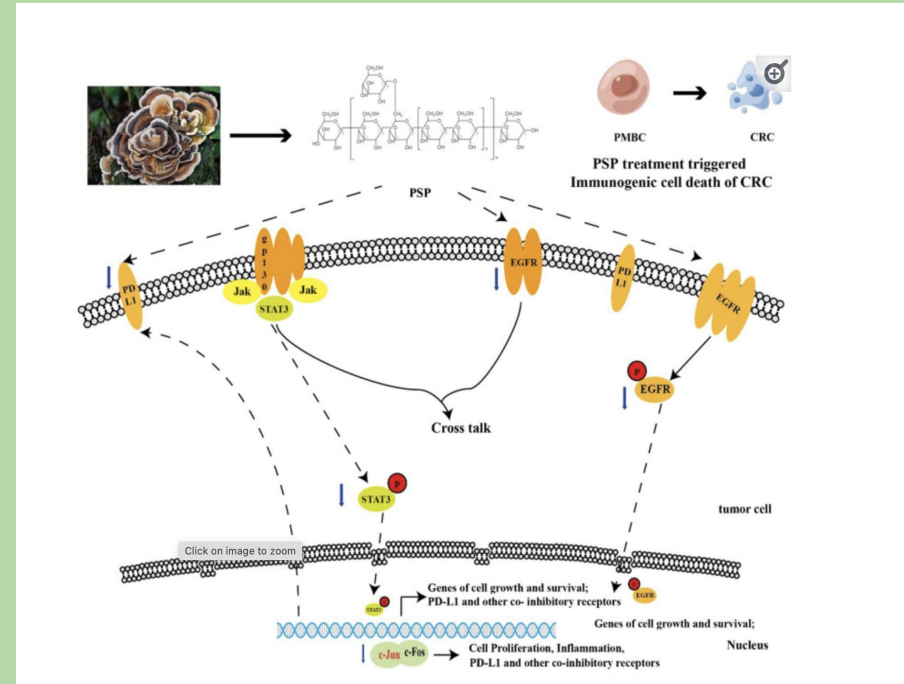
Aim of the study: In this study, researchers explored the mechanism of action of PSP and how it can inhibit CRC cell proliferation in vitro

Methods: CRC cells such as HCT116 and HT29, were treated with PSP, they evaluated of epidermal growth factor receptor(EGFR), apoptotic activity of PD-L1, activation of transcription, and T-cell activities.

Results:

- PSP significantly inhibited cell growth of the HCT116& HT29 cell line in vitro.
- Reduce the expression phosphorylation levels of EGFR
- It enhanced the activity of T-cells killing effect

Conclusions: PSP of Turkey tail may be used as a prophylactic & therapeutic agent against CRC via downregulating PD-L1 & EGFR signaling pathways.



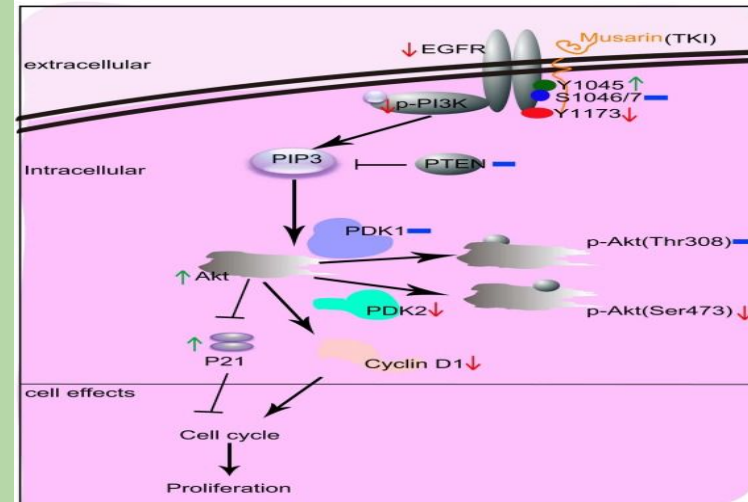
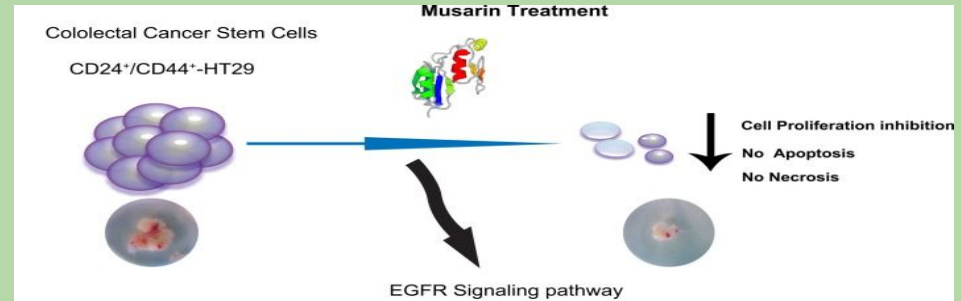
Musarin, a novel protein with tyrosine kinase inhibitory activity from *Trametes versicolor*, inhibits colorectal cancer stem cell growth, Ying He et al., (2021).

Objectives:

This study discovered a novel molecule: 12 kDa polysaccharide peptide Musarin and its mechanisms of action for CRC

Results:

- Musarin's anti-cancer bioactivity is high
- Was not observed any side effects & has low toxicity



***In Vitro* Anti-proliferative and Anti-invasive Effect of Polysaccharide-rich Extracts from *Trametes Versicolor* and *Grifola Frondosa* in Colon Cancer Cells, Roca-Lema et al., (2019)**

Aim of the study: Evaluate the anti-cancer effects of *Trametes versicolor* (TV)& *Grifola Frondosa* (GF)

Materials:

2 types of colon cells were obtained :

- LoVo cells from metastatic site
- HT-29, a colorectal adenocarcinoma cell line with an epithelial morphology

-CRC cells were treated with 10, 50, 100, 250 or 1000µg/ml of extracts from *Trametes versicolor* or *Grifola frondosa* for 24, 48 or 72 h.

-TV vs GF effects were explored separately as well with different concentrations

Application of 10 µg/ml of TV extract to LoVo cells (from metastatic sites) resulted below:

-in 24h did not show effect

-in 48h were slightly reduction

-in 72h was significant reduction

In contrast to TV extract, GF extract showed the earlier effect on LoVo cells than TV extract, with endpoint reduction similar, however, its cytotoxicity was higher on HT-29 cells than TV extract

***Results of the study:** TV and GF extracts were capable to directly inhibit CRC cell growth

Also, they stopped migration & invasion of cancer cells

Conclusion: The combination of TV & GF extract has the strongest antitumor effect, which also stops metastasis of CRC.

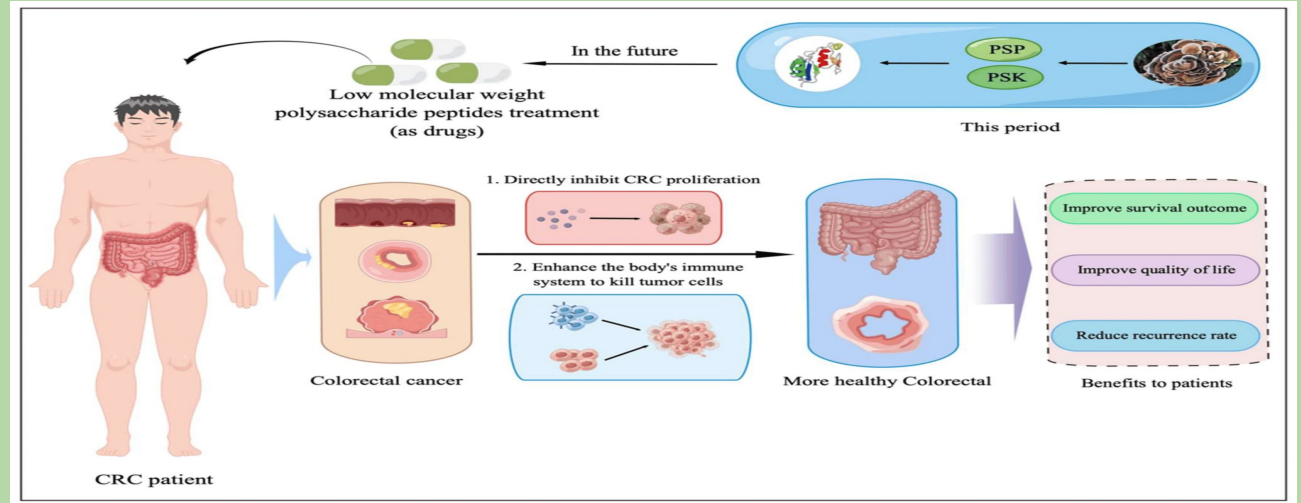
Conclusion

In conclusion, Turkey Tail has a significant beneficial effect on CRC treatment

- Suppresses tumor growth
- Enhances the immune system
- Stops the metastasis of CRC
- Low toxicity
- Increases survival rate of CRC
- Future studies should study Turkey tail on different types of cancers

Mushroom researcher Paul Stamets stated that Turkey tail is a great option treatment for cancer in combination of conventional medicine: [Mushrooms helping to cure cancer?](#)

Learn more about medicinal mushrooms: <https://fungi.com/>



References

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