

MUSHROOMS

Immune boosting superfood

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- Some bioactive compounds:
- polysaccharides
- triterpenes
- alkaloids
- tocopherols
- proanthocyanidins
- flavonoids
- carotenoids
- volatile oils
- ascorbic acid enzymes
- organic acids
- polyphenols
- folates

WHITE BUTTON

- edible, most widely consumed
- immune system, prostate, breast, prostate in mice
- induce immune activity in mice
- human studies in vitro show inhibition of colon & breast cancer cells, and initiate apoptosis in prostate cancer cells

REISHI

- "Medicine of Kings" mushroom of immortality, once reserved for royalty
- antiviral, antibacterial, antitumor
- immunomodulatory
- anti-inflammatory
- anti-aging, anti-ulcer, anti-diabetic
- anti-tumor, anti-cancer properties, asthma, diabetes, oxidative damage, cardiovascular disease, neurological disease & sleep promoting

MURRILL

- edible - Brazil, Japan, Asia
- animal & cell studies - inhibits tumors
- immune system, prostate, fibrosarcoma
- immune modulating, anti-tumor
- induces apoptosis
- human clinical trials in Asia - mixed results, some positive, some negative, reduced side effects reported

SUPPLEMENTS

- many mushrooms are available as supplements
- several US & Asian companies sell mushroom extracts
- always consult with your healthcare practitioner before starting any new supplements

Note: Images shown are not representative of nearby hot spots.

SHIITAKE



Anti-cancer effects:

- lentinan
- krestin
- calcetin
- ganoderic acid
- hysopon
- lectin
- illudin S
- psiloparin

NUTRIENTS

- protein (9 essential amino acids)
- high fiber
- low caloric, many are keto friendly
- phosphorus, calcium & potassium
- phosphorus converts to vitamin D when exposed to UV light
- sulfur containing amino acids depending on soil - important for apoptosis
- L-eranthione - a sulfur-rich acid-free radical scavenger which protects mitochondria from damage

TURKEY TAIL

- Yunzhi - ethanol extract studied in hormone positive prostate cancer
- positive potential adjuvant to breast cancer prevention
- tumor inhibition in human gastric, lung, colon & hepatoma cancer cells
- growth inhibited in human liver cancer cells

HOT OFF THE PRESS!

- March 2021 review of studies from 1964 - October 2020 on mushroom intake and cancer risk shows that higher mushroom intake associated with lower risk of total cancer
- breast cancer in particular could be due to topos of studies on mushrooms & other types of cancer

LET'S GET COOKING!

Mushrooms - It's what's for dinner! (or anytime!)



Creamy Coconut Mushroom Chicken

Directions

- Clean & slice the mushrooms, set aside
- Mince garlic, set aside
- Wash & dry chicken, season w/ salt, pepper & paprika
- Heat 3 tbs avocado oil in large skillet, sear chicken thighs for 7-10 minutes per side
- Remove chicken from skillet, set aside keeping warm
- Add 1 tbs avocado oil, mushrooms & garlic to skillet & sauté until tender
- Add coconut flour & sauté for a few minutes
- Add chicken broth to deglaze the pan, scrape up any stuck on bits
- Stir in coconut milk & sage, bring to simmer
- Allow sauce to thicken (about 5-7 minutes)
- Nestle chicken back into skillet, cover and allow chicken to cook through (check internal temp of 162-170)
- Add fresh chopped parsley & lemon juice prior to serving
- Enjoy!

Based on recipe by:
Smithie C. Creamy Coconut Mushroom Chicken. Clean Foodie Cravings. <https://cleanfoodiecravings.com/creamy-coconut-mushroom-chicken/>. Published July 16, 2020. Accessed May 7, 2021.



Sautéed Shrooms!

No need to get fancy -- just throw some mushrooms (more variety the better!) in a pan for an easy side dish. Start with a little avocado or coconut oil, fresh chopped garlic, shallots, &/or leeks, add the sliced mushrooms and fresh herbs like parsley, thyme, rosemary or anything else you have on hand. This is for a quick and easy side dish or any protein. For extra nutrient punch, toss in some dark leafy greens (kale, spinach, Swiss chard, etc.) at the end. Wilt the greens by adding some filtered water or high quality broth and covering for a few minutes.

Find high quality dried mushrooms at:
<https://mountainroseherbs.com>

REFERENCES

Ba DM, Senthong P, Beelman RB, Muscat J, Gao X, Richie JP. Higher Mushroom Consumption Is Associated with Lower Risk of Cancer: A Systematic Review and Meta-Analysis of Observational Studies. *Advances in Nutrition*. March 2021; doi:10.1093/advances/nmab015

Babu PD, Subrahree RS. The sacred mushroom "Reishi": A Review. *Am Eur J Botany*. 2008;1:107-110.

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Dillaril Ba, Paddy Senthong, Robert Beelman, Xiang Gao, John Richie. Mushroom Consumption Is Associated with Low Risk of Cancer: A Systematic Review and Meta-Analysis of Observational Studies. *Advances in Nutrition*. Volume 4, Issue Supplement_2, June 2020, Page 307. <https://doi.org/10.1093/advances/nmab015>

Figueiredo L, Regis WC. Medicinal mushrooms in adjuvant cancer therapies: an approach to anticancer effects and presumed mechanisms of action. *Nutrire*. 2017;42(1):1-10. doi:10.1186/s41100-017-0050-1

Hanifudda R, Popouri S, Palatty PL, Arora R, Baliga MS. Medicinal Plants as Antineemics in the Treatment of Cancer. *Integrative Cancer Therapies*. 2012;11(1):28-28. doi:10.1177/15437541141413266

He X, Wang X, Fang J, et al. Structures, biological activities, and industrial applications of the polysaccharides from *Hericium erinaceus* (Lion's Mane) mushroom: A review. *International Journal of Biological Macromolecules*. 2017;97:228-237. doi:10.1016/j.ijbiomac.2017.01.040

NOVAES M.R.C.G., NOVAES L.C.G. and TAVEIRA, V.C. 2007. Natural products from Agaricales medicinal mushrooms: Biology, structures, properties, and pharmacological effects on cancer. *Rev. Bras. Cancerol.* 53, 411-420.

Pires S, Gómez A. Recent developments in mushrooms as anti-cancer therapeutics: a review. *J. Biotech.* 2012;2(1):1-15. doi:10.1007/s12220-011-0036-2

Smithie C. Creamy Coconut Mushroom Chicken. Clean Foodie Cravings. <https://cleanfoodiecravings.com/creamy-coconut-mushroom-chicken/>. Published July 16, 2020. Accessed May 7, 2021.

Xu J, Beelman R, D Lamberti J. The Cancer Preventive Effects of Edible Mushrooms. *Anti-Cancer Agents in Medicinal Chemistry*. 2012;12(10):1255-1263. doi:10.2174/18750212803833017