Table S2 Pharmacological study of *Ophiocordyceps sinensis*

Chemical constituents of *O. sinensis*	**Pharmacological effects**	**References**
Ethyl acetate extract	Antineoplastic	[6]
Water extract	Antineoplastic	[7]
Water extract	Anti-inflammation	[8]
Water extract	Immunomodulatory	[9]
Water extract	Immunomodulatory	[10]
Water extract	Immunomodulatory	[11]
Water extract	Anti-inflammation	[12]
CME-1	Antineoplastic	[13]
CSP	Antineoplastic	[14]
CS	Antineoplastic	[15]
HSP-III	Antineoplastic	[16]
CSPS-1	Antineoplastic	[17]
WIPS	Antineoplastic, Antioxidant	[18]
AIPS	Antineoplastic, Antioxidant	[18]
Cordymin	Anti-inflammation, Antioxidant	[19]
CPS-F	Anti-inflammation	[20]
Polysaccharide	Inhibit colon inflammation	[21]
Polysaccharide	Anti-inflammation	[22]
Cordycepin	Anti-inflammation	[23]
Polysaccharide	Anti-inflammation	[24]
Polysaccharide	Anti-inflammation	[25]
Polysaccharide	Anti-inflammation	[26]
Polysaccharide	Immunomodulatory, Antioxidant	[27]
Polysaccharide	Immunomodulatory, Antitumor	[28]
Exopolysaccharides	Immunomodulatory	[29]
Polysaccharide	Immunomodulatory	[30]
APSF	Immunomodulatory	[31]
CSP	Immunomodulatory	[32]
UM01-S4	Immunomodulatory	[33]

Polysaccharide	Immunomodulatory	[34]
UST- 2000	Immunomodulatory	[35]
CS-PS	Immunomodulatory, antioxidant	[36]
OSP	Immunomodulatory	[37]
Polysaccharide	Immunomodulatory	[38]
Sphingolipids	Immunomodulatory	[39]
Polysaccharide	Immunomodulatory	[40]
Dried powder of mycelia	Immunomodulatory	[41]
CME-1	Immunomodulatory	[42]
Nucleoside	Against Renal Fibrosis	[43]
Water extract	Against Renal Fibrosis	[44]
Water solubles	Renal protective effect	[45]
Nucleosides and amino acids	Protected against myelosuppression	[46]
CPS-2	Against chronic renal failure	[47]
ISPS	Hypoglycemic, Antioxidant	[48]
Dried powder of mycelia	Hypoglycemic	[49]
Dried powder of mycelia	Against Diabetic nephropathy	[50]
alcohol extract	Hypoglycemic, Renoprotective	[51]
Exopolysaccharides	Protect effect	[52]
CSAP	Antibacterial	[53]
Supercritical Carbon Dioxide Extracts	Protect effect	[54]
Polysaccharide	Antioxidant	[55]
polypeptide	Anti-inflammation, Antioxidant	[19]
Exopolysaccharides	Antioxidant	[56]
Polysaccharide	Antioxidant	[57]
CPS1	Antioxidant	[58]
Polysaccharide	Antioxidant	[59]
Water extract	Antioxidant	[60]
Polysaccharide	Antioxidant	[61]
Exopolysaccharides	Antioxidant	[62]
Polysaccharide	Antioxidant	[58]

Polysaccharide	Antioxidant	[57]
Exopolysaccharides	Antioxidant	[63]
Polysaccharide	Antioxidant	[64]
Polysaccharide	Protect effect	[65]
Polysaccharide	Immunomodulatory, Antioxidant	[66]
Polysaccharide	Modulate gut microbiota	[67]
Sterol	Antitumor	[68]
Polysaccharide	Antitumor	[69]
Dried powder of mycelia	Hypotensive	[70]
CSP1-2	Hypotensive	[71]
Polysaccharide	Anti-fibrosis	[72]
Polysaccharide	Against liver injury	[73]
Water extract	Protective effect	[74]
Polysaccharide	Protective effect	[75]
Cordycepin	Protective effect	[76]
CME_1	Inhibits platelet	[77]
Water extract	Promote estradiol production	[78]
Water extract	Promotes testosterone production	[79]
Water extract	Promotes testosterone production	[80]
Polysaccharide	Modulate gut microbiota	[81]
Polysaccharide	Anti-fibrotic, Inflammatory	[82]
Polysaccharide	Anti-fibrotic	[83]
PS-A	Inhibite cholesterol esterase	[84]
Water extract	Anti-aging	[85]
Water extract	Anti-arteriosclerosis	[86]
Dried powder of mycelia	Preventing Alzheimer's disease	[87]

REFERENCES

1. Liu QB, Lu JG, Jiang ZH, Zhang W, Li WJ, et al. 2022. In situ Chemical Profiling and Imaging of Cultured and Natural *Cordyceps sinensis* by TOF-SIMS. *Front Chem* 10:862007
2. Wang S, Yang FQ, Feng K, Li DQ, Zhao J, Li SP. 2009. Simultaneous determination of nucleosides, myriocin, and carbohydrates in Cordyceps by HPLC coupled with diode array detection and evaporative light scattering detection. *J Sep Sci* 32:4069-76
3. Qiu X, Cao L, Han R. 2020. Analysis of Volatile Components in Different *Ophiocordyceps sinensis* and Insect Host Products. *Molecules* 25
4. Qin Y, Zhou R, Jin J, Xie J, Liu H, et al. 2020. UPLC-ESI-Q-TOF-MS/MS analysis of anticancer fractions from Ophiocordyceps xuefengensis and *Ophiocordyceps sinensis*. *Biomed Chromatogr* 34:e4841
5. Tang R, Qiu XH, Cao L, Long HL, Han RC. 2021. Stage- and Rearing-Dependent Metabolomics Profiling of *Ophiocordyceps sinensis* and Its Pipeline Products. *Insects* 12
6. Wu JY, Zhang QX, Leung PH. 2007. Inhibitory effects of ethyl acetate extract of *Cordyceps sinensis* mycelium on various cancer cells in culture and B16 melanoma in C57BL/6 mice. *Phytomedicine* 14:43-9
7. Thakur A, Hui R, Hongyan Z, Tian Y, Tianjun C, Mingwei C. 2011. Pro-apoptotic effects of Paecilomyces hepiali, a *Cordyceps sinensis* extract on human lung adenocarcinoma A549 cells in vitro. *J Cancer Res Ther* 7:421-6
8. Chen J, Chan WM, Leung HY, Leong PK, Yan CTM, Ko KM. 2020. Anti-Inflammatory Effects of a *Cordyceps sinensis* Mycelium Culture Extract (Cs-4) on Rodent Models of Allergic Rhinitis and Asthma. *Molecules* 25
9. Wei S, Peng W, Zhang C, Su L, Zhang Z, et al. 2021. *Cordyceps sinensis* aqueous extract regulates the adaptive immunity of mice subjected to (60) Co γ irradiation. *Phytother Res* 35:5163-77
10. Li DG, Ren ZX. 2017. *Cordyceps sinensis* promotes immune regulation and enhances bacteriostatic activity of PA-824 via IL-10 in Mycobacterium tuberculosis disease. *Braz J Med Biol Res* 50:e6188
11. Koh JH, Yu KW, Suh HJ, Choi YM, Ahn TS. 2002. Activation of macrophages and the intestinal immune system by an orally administered decoction from cultured mycelia of *Cordyceps sinensis*. *Biosci Biotechnol Biochem* 66:407-11
12. Park SY, Jung SJ, Ha KC, Sin HS, Jang SH, et al. 2015. Anti-inflammatory effects of Cordyceps mycelium (Paecilomyces hepiali, CBG-CS-2) in Raw264.7 murine macrophages. *Orient Pharm Exp Med* 15:7-12
13. Jayakumar T, Chiu CC, Wang SH, Chou DS, Huang YK, Sheu JR. 2014. Anti-cancer effects of CME-1, a novel polysaccharide, purified from the mycelia of *Cordyceps sinensis* against B16-F10 melanoma cells. *J Cancer Res Ther* 10:43-9
14. Qi W, Zhou X, Wang J, Zhang K, Zhou Y, et al. 2020. *Cordyceps sinensis* polysaccharide inhibits colon cancer cells growth by inducing apoptosis and autophagy flux blockage via mTOR signaling. *Carbohydr Polym* 237:116113
15. Ji NF, Yao LS, Li Y, He W, Yi KS, Huang M. 2011. Polysaccharide of *Cordyceps sinensis* enhances cisplatin cytotoxicity in non-small cell lung cancer H157 cell line. *Integr Cancer Ther* 10:359-67

16. Zhu ZY, Liu XC, Fang XN, Sun HQ, Yang XY, Zhang YM. 2016. Structural characterization and anti-tumor activity of polysaccharide produced by *Hirsutella sinensis*. *Int J Biol Macromol* 82:959-66
17. Mei YX, Yang W, Zhu PX, Peng N, Zhu H, Liang YX. 2014. Isolation, characterization, and antitumor activity of a novel heteroglycan from cultured mycelia of *Cordyceps sinensis. Planta Med* 80:1107-12
18. Yan J-K, Wang W-Q, Li L, Wu J-Y. 2011. Physiochemical properties and antitumor activities of two α-glucans isolated from hot water and alkaline extracts of Cordyceps (Cs-HK1) fungal mycelia. *Carbohydrate polymers.* 85:753-58
19. Wang J, Liu YM, Cao W, Yao KW, Liu ZQ, Guo JY. 2012. Anti-inflammation and antioxidant effect of Cordymin, a peptide purified from the medicinal mushroom *Cordyceps sinensis*, in middle cerebral artery occlusion-induced focal cerebral ischemia in rats. *Metab Brain Dis* 27:159-65
20. Wang Y, Wang Y, Liu D, Wang W, Zhao H, et al. 2015. Cordyceps sinensis polysaccharide inhibits PDGF-BB-induced inflammation and ROS production in human mesangial cells. *Carbohydr Polym* 125:135-45
21. Fan ST, Nie SP, Huang XJ, Wang S, Hu JL, et al. 2018. Protective properties of combined fungal polysaccharides from *Cordyceps sinensis* and Ganoderma atrum on colon immune dysfunction. *Int J Biol Macromol* 114:1049-55
22. Li LQ, Song AX, Yin JY, Siu KC, Wong WT, Wu JY. 2020. Anti-inflammation activity of exopolysaccharides produced by a medicinal fungus *Cordyceps sinensis* Cs-HK1 in cell and animal models. *Int J Biol Macromol* 149:1042-50
23. Tan L, Song X, Ren Y, Wang M, Guo C, et al. 2020. Anti-inflammatory effects of cordycepin: A review. *Phytother Res*
24. Li LQ, Song AX, Wong WT, Wu JY. 2021. Isolation and Assessment of a Highly-Active Anti-Inflammatory Exopolysaccharide from Mycelial Fermentation of a Medicinal Fungus Cs-HK1. *Int J Mol Sci* 22
25. Yan W, Li T, Zhong Z. 2014. Anti-inflammatory effect of a novel food Cordyceps guangdongensis on experimental rats with chronic bronchitis induced by tobacco smoking. *Food Funct* 5:2552-7
26. Li LQ, Song AX, Wong WT, Wu JY. 2021. Modification and enhanced anti-inflammatory activity by Bifidobacterial fermentation of an exopolysaccharide from a medicinal fungus Cs-HK1. *Int J Biol Macromol* 188:586-94
27. Chen S, Wang J, Fang Q, Dong N, Nie S. 2019. Polysaccharide from natural *Cordyceps sinensis* ameliorated intestinal injury and enhanced antioxidant activity in immunosuppressed mice. *Food Hydrocolloids* 89:661-67
28. Zhang W, Yang J, Chen J, Hou Y, Han X. 2005. Immunomodulatory and antitumour effects of an exopolysaccharide fraction from cultivated *Cordyceps sinensis* (Chinese caterpillar fungus) on tumour-bearing mice. *Biotechnol Appl Biochem* 42:9-15
29. Sheng L, Chen J, Li J, Zhang W. 2011. An exopolysaccharide from cultivated *Cordyceps sinensis* and its effects on cytokine expressions of immunocytes. *Appl Biochem Biotechnol* 163:669-78
30. Wu DT, Meng LZ, Wang LY, Lv GP, Cheong KL, et al. 2014. Chain conformation and immunomodulatory activity of a hyperbranched polysaccharide from *Cordyceps sinensis*. *Carbohydr Polym* 110:405-14

31. Chen W, Yuan F, Wang K, Song D, Zhang W. 2012. Modulatory effects of the acid polysaccharide fraction from one of anamorph of *Cordyceps sinensis* on Ana-1 cells. *J Ethnopharmacol* 142:739-45
32. Ying M, Yu Q, Zheng B, Wang H, Wang J, et al. 2020. Cultured *Cordyceps sinensis* polysaccharides modulate intestinal mucosal immunity and gut microbiota in cyclophosphamide-treated mice. *Carbohydr Polym* 235:115957
33. Cheong KL, Meng LZ, Chen XQ, Wang LY, Wu DT, et al. 2016. Structural elucidation, chain conformation and immuno-modulatory activity of glucogalactomannan from cultured *Cordyceps sinensis* fungus UM01. *Journal of Functional Foods* 25:174-85
34. Meng L-Z, Feng K, Wang L-Y, Cheong K-L, Nie H, et al. 2014. Activation of mouse macrophages and dendritic cells induced by polysaccharides from a novel *Cordyceps sinensis* fungus UM01. *Journal of Functional Foods* 9:242-53
35. Cheung JK, Li J, Cheung AW, Zhu Y, Zheng KY, et al. 2009. Cordysinocan, a polysaccharide isolated from cultured Cordyceps, activates immune responses in cultured T-lymphocytes and macrophages: signaling cascade and induction of cytokines. *J Ethnopharmacol* 124:61-8
36. Zhang J, Yu Y, Zhang Z, Ding Y, Dai X, Li Y. 2011. Effect of polysaccharide from cultured *Cordyceps sinensis* on immune function and anti-oxidation activity of mice exposed to 60Co. *Int Immunopharmacol* 11:2251-7
37. Liu Y, Li QZ, Li LD, Zhou XW. 2021. Immunostimulatory effects of the intracellular polysaccharides isolated from liquid culture of *Ophiocordyceps sinensis* (Ascomycetes) on RAW264.7 cells via the MAPK and PI3K/Akt signaling pathways. *J Ethnopharmacol* 275:114130
38. Rong L, Li G, Zhang Y, Xiao Y, Qiao Y, et al. 2021. Structure and immunomodulatory activity of a water-soluble α-glucan from *Hirsutella sinensis* mycelia. *Int J Biol Macromol* 189:857-68
39. Wu R, Jia Q, Li X, Ma Y, Zhang J, et al. 2022. Preparation of the sphingolipid fraction from mycelia of *Cordyceps sinensis* and its immunosuppressive activity. *J Ethnopharmacol* 291:115126
40. Kuo MC, Chang CY, Cheng TL, Wu MJ. 2007. Immunomodulatory effect of exo-polysaccharides from submerged cultured *Cordyceps sinensis*: enhancement of cytokine synthesis, CD11b expression, and phagocytosis. *Appl Microbiol Biotechnol* 75:769-75
41. Shi B, Wang Z, Jin H, Chen YW, Wang Q, Qian Y. 2009. Immunoregulatory *Cordyceps sinensis* increases regulatory T cells to Th17 cell ratio and delays diabetes in NOD mice. *Int Immunopharmacol* 9:582-6
42. Sheu JR, Chen ZC, Hsu MJ, Wang SH, Jung KW, et al. 2018. CME-1, a novel polysaccharide, suppresses iNOS expression in lipopolysaccharide-stimulated macrophages through ceramide-initiated protein phosphatase 2A activation. *J Cell Mol Med* 22:999-1013
43. Dong Z, Sun Y, Wei G, Li S, Zhao Z. 2019. A Nucleoside/Nucleobase-Rich Extract from *Cordyceps sinensis* Inhibits the Epithelial-Mesenchymal Transition and Protects against Renal Fibrosis in Diabetic Nephropathy. *Molecules* 24
44. Pan MM, Zhang MH, Ni HF, Chen JF, Xu M, et al. 2013. Inhibition of TGF-β1/Smad signal pathway is involved in the effect of *Cordyceps sinensis* against renal fibrosis in 5/6 nephrectomy rats. *Food Chem Toxicol* 58:487-94
45. He P, Lei J, Miao JN, Wu D, Wang C. 2020. *Cordyceps sinensis* attenuates HBx-induced cell apoptosis in HK-2 cells through suppressing the PI3K/Akt pathway. *Int J Mol Med* 45:1261-69

46. Zhang Y, Liu J, Wang Y, Sun C, Li W, et al. 2022. Nucleosides and amino acids, isolated from *Cordyceps sinensis*, protected against cyclophosphamide-induced myelosuppression in mice. *Nat Prod Res* 36:6056-59
47. Wang Y, Liu D, Zhao H, Jiang H, Luo C, et al. 2014. *Cordyceps sinensis* polysaccharide CPS-2 protects human mesangial cells from PDGF-BB-induced proliferation through the PDGF/ERK and TGF-β1/Smad pathways. *Mol Cell Endocrinol* 382:979-88
48. Yang S, Zhang H. 2016. Production of intracellular selenium-enriched polysaccharides from thin stillage by *Cordyceps sinensis* and its bioactivities. *Food Nutr Res* 60:30153
49. El Zahraa ZEAF, Mahmoud MF, El Maraghy NN, Ahmed AF. 2012. Effect of *Cordyceps sinensis* and taurine either alone or in combination on streptozotocin induced diabetes. *Food Chem Toxicol* 50:1159-65
50. Zhang Q, Xiao X, Li M, Yu M, Ping F. 2022. Bailing capsule (*Cordyceps sinensis*) ameliorates renal triglyceride accumulation through the PPARα pathway in diabetic rats. *Front Pharmacol* 13:915592
51. Kan WC, Wang HY, Chien CC, Li SL, Chen YC, et al. 2012. Effects of Extract from Solid-State Fermented *Cordyceps sinensis* on Type 2 Diabetes Mellitus. *Evid Based Complement Alternat Med* 2012:743107
52. Mao YH, Song AX, Wang ZM, Yao ZP, Wu JY. 2018. Protection of Bifidobacterial cells against antibiotics by a high molecular weight exopolysaccharide of a medicinal fungus Cs-HK1 through physical interactions. *Int J Biol Macromol* 119:312-19
53. HU, Zheng~, YE, Maoqing~1, XIA, et al. 2006. Purification and Characterization of an Antibacterial Protein from the Cultured Mycelia of *Cordyceps sinensis*. *Wuhan University Journal of Natural Sciences*
54. Mishra J, Khan W, Ahmad S, Misra K. 2021. Supercritical Carbon Dioxide Extracts of *Cordyceps sinensis*: Chromatography-based Metabolite Profiling and Protective Efficacy Against Hypobaric Hypoxia. *Front Pharmacol* 12:628924
55. Wang J, Nie S, Kan L, Chen H, Cui SW, et al. 2017. Comparison of structural features and antioxidant activity of polysaccharides from natural and cultured *Cordyceps sinensis*. *Food Sci Biotechnol* 26:55-62
56. Huang QL, Siu KC, Wang WQ, Cheung YC, Wu JY. 2013. Fractionation, characterization and antioxidant activity of exopolysaccharides from fermentation broth of a *Cordyceps sinensis* fungus. *Process Biochemistry* 48:380-86
57. Li XL, Li D. 2013. Enhancing Antioxidant Activity of Soluble Polysaccharide from the Submerged Fermentation Product of *Cordyceps sinensis* by Using Cellulase. *Advanced Materials Research* 641-642:975-78
58. Wang Y, Wang M, Ling Y, Fan W, Wang Y, Yin H. 2009. Structural determination and antioxidant activity of a polysaccharide from the fruiting bodies of cultured *Cordyceps sinensis*. *Am J Chin Med* 37:977-89
59. Leung PH, Zhao S, Ho KP, Wu JY. 2009. Chemical properties and antioxidant activity of exopolysaccharides from mycelial culture of *Cordyceps sinensis* fungus Cs-HK1. *Food Chemistry* 114:1251-56
60. Dong CH, Yao YJ. 2008. In vitro evaluation of antioxidant activities of aqueous extracts from natural and cultured mycelia of *Cordyceps sinensis*. *Lebensm Wiss Technol* 41:669-77
61. Li SP, Li P, Dong TT, Tsim KW. 2001. Anti-oxidation activity of different types of natural *Cordyceps sinensis* and cultured Cordyceps mycelia. *Phytomedicine* 8:207-12

62. Yan JK, Li L, Wang ZM, Leung PH, Wang WQ, Wu JY. 2009. Acidic degradation and enhanced antioxidant activities of exopolysaccharides from *Cordyceps sinensis* mycelial culture. *Food Chemistry* 117:641-46
63. Yan JK, Wang WQ, Ma HL, Wu JY. 2012. Sulfation and enhanced antioxidant capacity of an exopolysaccharide produced by the medicinal fungus *Cordyceps sinensis*. *Molecules* 18:167-77
64. Wang L, Wang G, Zhang J, Zhang G, Jia L, et al. 2011. Extraction optimization and antioxidant activity of intracellular selenium polysaccharide by *Cordyceps sinensis* SU-02. *Carbohydrate Polymers* 86:1745-50
65. Li SP, Zhao KJ, Ji ZN, Song ZH, Dong TT, et al. 2003. A polysaccharide isolated from *Cordyceps sinensis*, a traditional Chinese medicine, protects PC12 cells against hydrogen peroxide-induced injury. *Life Sci* 73:2503-13
66. Chen J, Zhang W, Lu T, Li J, Zheng Y, Kong L. 2006. Morphological and genetic characterization of a cultivated *Cordyceps sinensis* fungus and its polysaccharide component possessing antioxidant property in H22 tumor-bearing mice. *Life Sci* 78:2742-8
67. Chen L, Zhang L, Wang W, Qiu W, Liu L, et al. 2020. Polysaccharides isolated from *Cordyceps sinensis* contribute to the progression of NASH by modifying the gut microbiota in mice fed a high-fat diet. *PLoS ONE* 15:e0232972
68. Bok JW, Lermer L, Chilton J, Klingeman HG, Towers GH. 1999. Antitumor sterols from the mycelia of Cordyceps sinensis. *Phytochemistry* 51:891-8
69. JiaoGuan, LiqinHan, NianqiuShi, HeyunZhu, JunminWang. 2020. Development, in vitro biocompatibility, and antitumor efficacy of acetic acid-modified *Cordyceps sinensis* polysaccharide nanoparticle drug delivery system. *Brazilian Journal of Pharmaceutical Science* 56
70. Hiraishi K, Kurahara LH, Feng J, Yamamura A, Cui Y, et al. 2021. Substantial involvement of TRPM7 inhibition in the therapeutic effect of *Ophiocordyceps sinensis* on pulmonary hypertension. *Transl Res* 233:127-43
71. Xiang F, Lin L, Hu M, Qi X. 2016. Therapeutic efficacy of a polysaccharide isolated from *Cordyceps sinensis* on hypertensive rats. *Int J Biol Macromol* 82:308-14
72. Liu W, Li Z, Sun Z, Xu Y, Wang S, et al. 2019. The components data of fuzheng huayu extracts, *Cordyceps sinensis* mycelia polysaccharide, gypenosides and amygdalin. *Data Brief* 25:104087
73. Fan S, Huang X, Wang S, Li C, Zhang Z, et al. 2018. Combinatorial usage of fungal polysaccharides from *Cordyceps sinensis* and Ganoderma atrum ameliorate drug-induced liver injury in mice. *Food Chem Toxicol* 119:66-72
74. Bai X, Tang Y, Lin Y, Zhao Y, Tan T, et al. 2018. Protective effect of *Cordyceps sinensis* extract on rat brain microvascular endothelial cells injured by oxygen-glucose deprivation. *Traditional Chinese Medical Sciences* 5:8
75. Xiao Y, Zhang X, Huang Q. 2022. Protective effects of *Cordyceps sinensis* exopolysaccharide-selenium nanoparticles on H(2)O(2)-induced oxidative stress in HepG2 cells. *Int J Biol Macromol* 213:339-51
76. Ku CW, Ho TJ, Huang CY, Chu PM, Ou HC, Hsieh PL. 2021. Cordycepin Attenuates Palmitic Acid-Induced Inflammation and Apoptosis of Vascular Endothelial Cells through Mediating PI3K/Akt/eNOS Signaling Pathway. *Am J Chin Med* 49:1703-22
77. Lu WJ, Chang NC, Jayakumar T, Liao JC, Lin MJ, et al. 2014. Ex vivo and in vivo studies of CME-1, a novel polysaccharide purified from the mycelia of *Cordyceps sinensis* that inhibits

human platelet activation by activating adenylate cyclase/cyclic AMP. *Thromb Res* 134:1301-10

78. Huang BM, Hsiao KY, Chuang PC, Wu MH, Pan HA, Tsai SJ. 2004. Upregulation of steroidogenic enzymes and ovarian 17beta-estradiol in human granulosa-lutein cells by *Cordyceps sinensis* mycelium. *Biol Reprod* 70:1358-64
79. Hsu CC, Huang YL, Tsai SJ, Sheu CC, Huang BM. 2003. In vivo and in vitro stimulatory effects of *Cordyceps sinensis* on testosterone production in mouse Leydig cells. *Life Sci* 73:2127-36
80. Huang YL, Leu SF, Liu BC, Sheu CC, Huang BM. 2004. In vivo stimulatory effect of *Cordyceps sinensis* mycelium and its fractions on reproductive functions in male mouse. *Life Sci* 75:1051-62
81. Chen S, Wang J, Dong N, Fang Q, Zhang Y, et al. 2023. Polysaccharides from natural *Cordyceps sinensis* attenuated dextran sodium sulfate-induced colitis in C57BL/6J mice. *Food Funct* 14:720-33
82. Huang D, Meran S, Nie SP, Midgley A, Wang J, et al. 2017. *Cordyceps sinensis* : Anti-fibrotic and inflammatory effects of a cultured polysaccharide extract. *Bioactive Carbohydrates & Dietary Fibre*:S2212619817300220
83. Peng J, Li X, Feng Q, Chen L, Xu L, Hu Y. 2013. Anti-fibrotic effect of *Cordyceps sinensis* polysaccharide: Inhibiting HSC activation, TGF-β1/Smad signalling, MMPs and TIMPs. *Exp Biol Med (Maywood)* 238:668-77
84. Kim SD. 2010. Isolation, Structure and Cholesterol Esterase Inhibitory Activity of a Polysaccharide, PS-A, from *Cordyceps sinensis*. *Journal of the Korean Society for Applied Biological Chemistry* 53:784-89
85. Liu A, Wu J, Li A, Bi W, Liu T, et al. 2016. The inhibitory mechanism of *Cordyceps sinensis* on cigarette smoke extract-induced senescence in human bronchial epithelial cells. *Int J Chron Obstruct Pulmon Dis* 11:1721-31
86. Zhang Y, Yang M, Gong S, Yang Y, Chen B, et al. 2012. *Cordyceps sinensis* extracts attenuate aortic transplant arteriosclerosis in rats. *J Surg Res* 175:123-30
87. Chen Y, Fu L, Han M, Jin M, Wu J, et al. 2018. The Prophylactic and Therapeutic Effects of Fermented *Cordyceps sinensis* Powder, Cs-C-Q80, on Subcortical Ischemic Vascular Dementia in Mice. *Evid Based Complement Alternat Med* 2018:4362715