



## FOUNDATIONS OF INTEGRATIVE ONCOLOGY

### Module 4 Toolbox: Therapeutic Interventions & Immue Modulation

#### Lesson 5 Materia Medica: Immune Modulation

##### Learning Objectives – Understand and describe:

- Actions, applications and functions of Polysaccharide and Beta Glucan Rich Asian Medicinal Mushrooms:
  - **Cordyceps sinensis** (Dong Chong Xia Cao)
  - **Ganoderma lucidum** (Ling Zhi)
  - **Astragalus membranaceus root** (Huang Qi)

##### Polysaccharides & Beta Glucans

- Enhance cell-mediated immune responses in vivo and in vitro
- Act as biological response modifiers
- Activate immune cells
- Multi-cytokine inducers: Induce gene expression of immunomodulatory cytokines and receptors

##### Cordyceps sinensis (Dong Chong Xia Cao)

- Inflammation control, Immune modulation
- Inhibits angiogenesis, proliferation, metastasis
- Pro-apoptotic
- Antioxidant

##### Ganoderma lucidum (Ling Zhi Reishi) “Mushroom of Immortality”

- Anti-inflammatory, Antiviral, Immunomodulating/Activating
- Pro-apoptotic, inhibits growth factors, suppresses angiogenesis
- Antioxidant

##### Astragalus membranaceus root (Huang Qi)

- Immune potentiation, Chemo-sensitizer, Chemo-protectant
- Pro-apoptotic, suppresses angiogenesis
- Immune modulation
- Combined with *Salvia miltiorrhiza* (Dan Shen): Hepatoprotectant, Normalizes coagulation factors and hemodynamics

## References

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- Khan, M. A., Tania, M., Zhang, D., & Chen, H. (2010). Cordyceps mushroom: a potent anticancer nutraceutical. *The Open Nutraceutical Journal*, 3, 179-183.
- Yance, D. R. (2013). *Adaptogens in medical herbalism: Elite herbs and natural compounds for mastering stress, aging, and chronic disease*. Healing Arts Press.