



## Lecture 71:

# Ergogenic Adaptogens

## Part 2

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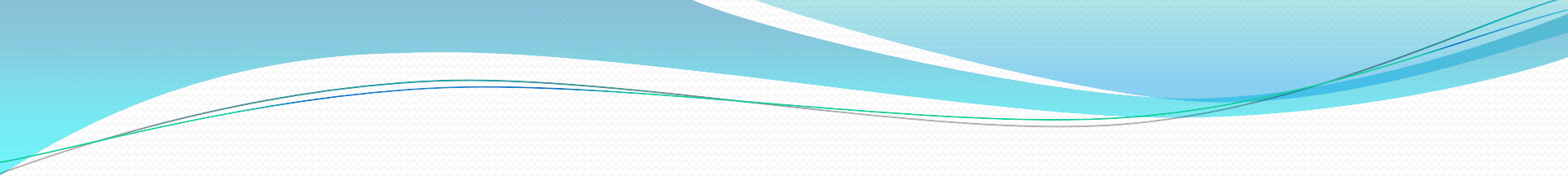
# Cordyceps Sinensis:

- Cordyceps sinensis is a type of Chinese mushroom famous as “*caterpillar fungus*”.
- This herb has been traditionally used as an aphrodisiac.



Cordyceps Sinensis.

Image: Copyright©Depositphotos.com/Norman Chan.

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- The **active ingredients** in cordyceps sinensis are cordycepin, adenosine, ophiocordin, cordypyridones, sterols, alkenoic acid, bioxanthracenes, and polysaccharadies.

# ***Athletic Benefits of Cordyceps Sinensis:***

- Improves athletic performance.
- Increases oxygen uptake.
- Delays fatigue and exhaustion time.
- May help protect against overtraining syndrome.
- Improves endurance.
- Enhances stamina.
- May increase testosterone level.

# ***Non – Athletic Benefits of Cordyceps Sinensis:***

**Cordyceps sinensis may be beneficial in the following conditions:**

- **Low sex drive.**
- **Chronic active hepatitis.**
- **Kidney disease.**
- **Chronic fatigue syndrome.**
- **Liver disease.**
- **Cancers.**
- **Recovery from a chronic illness.**

## **Dosage:**

- **The recommended dose of cordyceps sinensis is 3 – 7 grams a day.**
- **It should be taken on an empty stomach as an adaptogen and 30 – 60 minutes before exercise or competition as a sport – performance enhancer.**

# Eleuthero (Siberian Ginseng):

- It is related to Asian ginseng (panax ginseng).
- Known also as **ci wu jia**, **devil's shrub**, and **touch-me-not**, eleuthero has been widely used in Chinese medicine.
- The active ingredients of eleuthero responsible for its effects are **eleutherosides**, **polysaccharides**, and **isofraxidin**.



**Eleutherococcus (Siberian Ginseng) Berries.**

*Image: Copyright©Depositphotos.com/russ.*

# Athletic Benefits of Eleuthero:

- Improves athletic performance.
- Delays exhaustion time.
- Helps recover quickly from overtraining syndrome.
- Enhances endurance by increasing oxygen uptake by the muscles.
- Reduces post – exercise exhaustion.
- Improves aerobic capacity.

## **Non – Athletic Benefits of Eleuthero:**

**Siberian ginseng may have potential benefits in the following conditions:**

- **Chronic fatigue syndrome.**
- **Adrenal exhaustion.**
- **Fibromyalgia.**
- **Frequent common cold and flu.**
- **Diabetes.**
- **Breast cancer.**
- **High LDL cholesterol.**

## **Dosage and Side Effects:**

- **Eleuthero is generally taken as dried powder 2 – 3 grams a day or standardized extract 500 – 1000 mg a day.**
- **The possible side effects of eleuthero are diarrhea, insomnia, nervousness, increased blood pressure, headache, and hypoglycemia.**

# Ginkgo Biloba:

- **Ginkgo biloba is a tree and the extract of its leaves has been used for medicinal purposes for years.**
- **The active constituents of ginkgo biloba are flavonoids (quercetin and myricetin) and terpenoids (ginkgolides and bilobalides).**



**Ginkgo Biloba Leaves.**

*Image: Copyright©Depositphotos.com/Alfio Scisetti*

# **Athletic Benefits of Ginkgo Biloba:**

**The flavonoids in ginkgo biloba improve blood circulation at the capillary levels, which affects athletic performance via three mechanisms:**

- **(1) increased blood flow to the muscles helps build muscles easier.**
- **(2) increased blood flow improves oxygenation.**
- **(3) increased blood flow to the brain enhances mental alertness.**

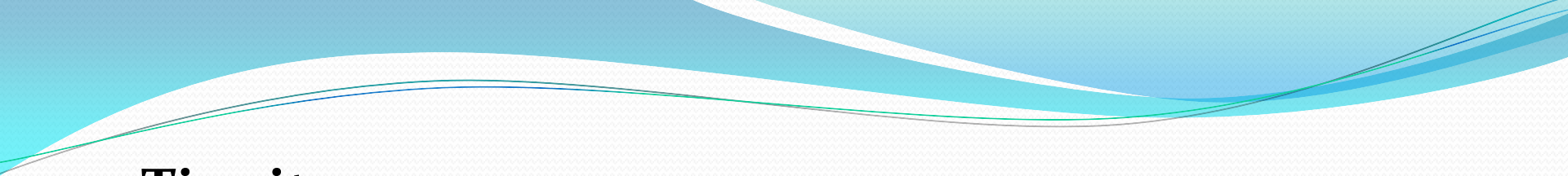
## **Potential athletic benefits are:**

- **A potent antioxidant.**
- **Supports muscle building.**
- **Improves oxygenation to the muscles.**
- **Helps improve aerobic capacity.**
- **May increase athletic endurance.**
- **Improves concentration and mental alertness.**
- **May help prevent from mountain sickness (altitude sickness).**
- **Reduces oxidative damages resulted from exercise.**

# **Non - Athletic Benefits of Ginkgo Biloba:**

**Ginkgo biloba may be beneficial in the following conditions:**

- **Erectile dysfunction.**
- **Schizophrenia.**
- **Depression.**
- **Vertigo.**
- **Asthma.**
- **Raynaud`s phenomenon.**
- **Meniere`s disease.**
- **Attention deficit disorder (ADD).**

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- **Tinnitus.**
  - **Macular degeneration.**
  - **Dementias, including Alzheimer's disease.**
  - **Poor memory.**
  - **Glaucoma.**
  - **Diabetes.**
  - **Multiple sclerosis (MS).**
  - **Stroke.**
  - **Premenstrual syndrome (PMS).**
  - **Peripheral occlusive artery disease.**

## **Side Effects:**

- **Ginkgo biloba shows a mild blood thinning effect by blocking platelet aggregation.**
- **Other potential side effects include stomach upset, headaches, dizziness, nausea, diarrhea, and skin allergic reactions.**

# Dosage and Interactions:

- Most available products have been standardized to contain 24 - 32% Flavonoids and 6 - 12% terpenoids.
- Ginkgo biloba is usually taken **120 – 480 mg daily**.



Ginkgo biloba leaves and pills.  
Image: Copyright©Depositphotos.com/Olga Yastremska

## **Exercise caution when taking ginkgo biloba along with or in the following conditions:**

- **1) High doses of Omega – 3.**
- **2) Aspirin.**
- **3) Advil or any other non-steroidal anti-inflammatory drugs (NSAIDs).**
- **4) Anti – depressant medications.**
- **5) Anti – epileptic medications.**
- **6) Anti – diabetic medications.**
- **7) Medications for High blood pressure.**

## **Ginkgo biloba should be avoided in the following conditions:**

- 1) Taking along with anticoagulants, for example, warfarin.
- 2) Pregnancy and breastfeeding.
- 3) Major surgeries (you should stop taking ginkgo biloba 2 -3 days before any scheduled major surgery or dental procedures).
- 4) Epilepsy.

# Gotu Kola:

- Gotu kola is an herb used extensively in Chinese medicine and Ayurvedic medicine.
- The main active ingredients in gotu kola are **triterpenoids**. They **reduce inflammation**, may prevent from **scar tissue formation** by blocking the synthesis of collagen, and improve **blood circulation** in veins.
- The standardized triterpenoid in the products of gotu kola is **asiaticoside**.



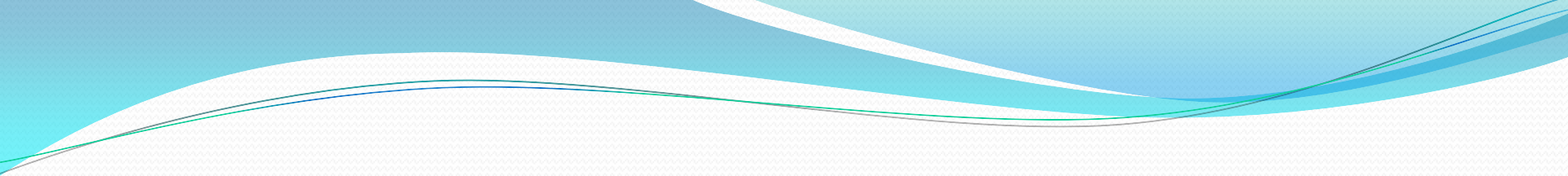
# **Athletic Benefits of Gotu Kola:**

- **Reduces inflammation in strains and sprains.**
- **Speeds up recovery from sports injuries.**
- **May improve mental alertness and stamina.**
- **May decrease pre – competition anxiety.**

# **Non – Athletic Benefits of Gotu Kola:**

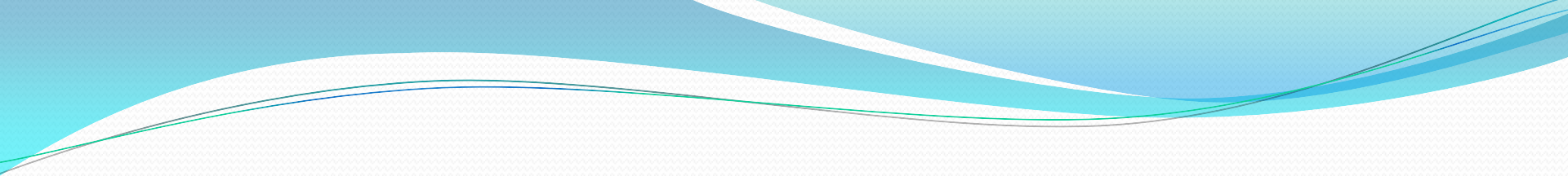
**The following conditions may potentially benefit from gotu kola:**

- **Chronic venous insufficiency.**
- **Varicose veins.**
- **Scar formation.**
- **Keloids.**
- **Burns.**
- **Wound healing.**

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- **Scleroderma.**
  - **Bronchitis.**
  - **Cough.**
  - **Psoriasis.**
  - **Pregnancy – induced stretch marks.**
  - **Atherosclerosis.**
  - **Common cold and flu.**

## Dosage and Side Effects:

- Gotu kola can be taken as powdered herb 3 – 6 grams a day, standardized extract 50 – 1000 mg a day (depending on percentage of asiaticoside in the product), or tincture 10 – 20 ml a day.
- Gotu kola should be avoided taking along with sedatives and tranquilizers.

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- Side effects of gotu kola are rare and they happen in higher doses.
  - Potential side effects are allergic reactions, headache, stomach upset, nausea, dizziness, and drowsiness.

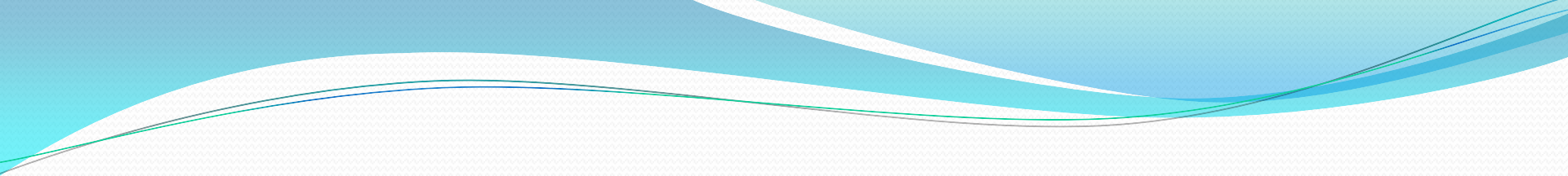
# Licorice:

- Licorice is an adaptogenic herb used extensively throughout the world.
- Also known as **sweetwood, sweetroot, the great detoxifier, and the great adrenal supporter**, licorice has anti – viral, anti – bacterial, and anti – inflammatory properties.



Licorice Plant.

Image: Copyright©Depositphotos.com/Jolanta Dąbrowska

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- The active ingredients in licorice are glycyrrhizin, flavonoids, anethole, and isoflavones.
  - The sweetness of licorice results from **glycyrrhizin**, which is about 40 times sweeter than sugar.

## **Athletic Benefits of Licorice:**

- **Helps recover from overtraining syndrome.**
- **Has a protective effect against overtraining syndrome.**
- **Reduces inflammation in strains and sprains.**
- **May accelerate recovery from sports injuries.**

# **Non – Athletic Benefits of Licorice:**

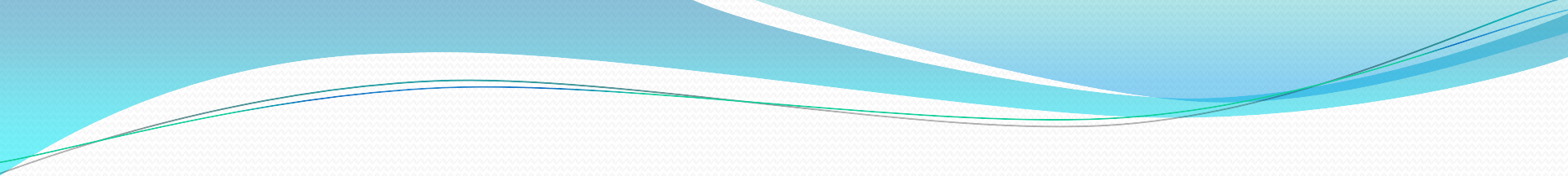
**Licorice may be beneficial in the following conditions:**

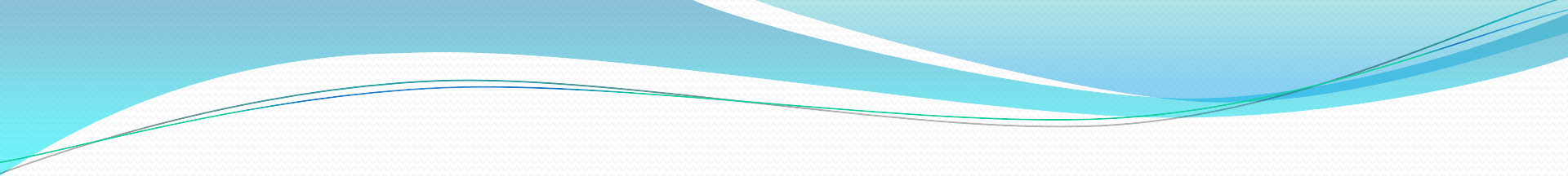
- **Adrenal exhaustion.**
- **Infections.**
- **Peptic ulcer.**
- **Gastritis.**
- **Gastroesophageal reflux disease (GERD).**
- **HIV support.**
- **Asthma.**
- **Chronic obstructive pulmonary disease (COPD).**

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- **Chronic fatigue syndrome.**
  - **Inflammatory bowel disease (IBD).**
  - **Coughs.**
  - **Sore throat.**
  - **Canker sore.**
  - **Eczema.**
  - **Indigestion.**
  - **Hepatitis.**
  - **Colic.**
  - **Constipation.**
  - **Arthritis.**
  - **Stress.**
  - **Melasma.**

# Dosage and Side Effects:

- Licorice is available in two forms: standardized licorice and **DGL (de – glycyrrhizinated licorice)**. Licorice can be used as dried root 4 – 6 grams a day, standardized extract 500 – 1500 mg a day, DGL 500 – 1500 mg a day, or chewable DGL 500 – 1500 mg a day.
- The chewable form should be chewed about 20 minutes before meal and bedtime.

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- Continuous consumption of licorice is discouraged.
  - We strongly recommend “*periodization*”, which means consuming licorice for 4 – 6 weeks, then tapering the dose over the next two weeks to nothing, and finally stopping taking for two weeks before resuming.

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- **Licorice could cause some side effects.**
  - **Glycyrrhizin – containing licorice may cause pseudoaldosteronism, which is characterized by increased blood pressure, water retention, fatigue and headaches.**
  - **Also long term consumption of glycyrrhizin may lower testosterone level.**



Licorice should be **avoided** in the following conditions:

- Heart disease.
- Congestive heart failure.
- Edema.
- Liver disease.
- Kidney disease.
- High blood pressure.
- Hypokalemia (low potassium level).
- Erectile dysfunction.
- Diabetes.
- Pregnancy.

## Interactions:

- 1) **Warfarin:** licorice reduces its blood level and effectiveness.
- 2) **Corticosteroids:** licorice may increase their effects.
- 3) **Digoxin:** licorice may increase digoxin toxicity.
- 4) **Anti – diabetic medications and insulin:** licorice may increase blood sugar level.
- 5) **Birth control pills:** licorice may increase their side effects particularly rising blood pressure.
- 6) **MAO inhibitors:** licorice may enhance their effects.

# Homework:

- 1) Describe the athletic benefits of cordyceps sinensis .
- 2) Describe the athletic benefits of ginkgo biloba.



