INFLUENCE OF CORDYCEPS SINESIS EXTRACT ON FERMENTATION PROCESS

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**OBJECTIVES**

- Developing novel beer based products with health-promoting properties.

- Using mushrooms as a natural source of nutritional supplements.

- Influence of *Cordyceps* extract on growth of yeast’s cells.

- Influence of *Cordyceps* extract on fermentation process.
What is *CORDYCEPS SINESIS*?

- Edible and medicinal fungi
- Used in Asia for thousand of years
- Parasites larvae of ghost moths
- The fungus germinates in the living larva
- Kills and mummifies it
- Stalk-like fruiting body emerges from the corpse
CORDYCEPS SINESIS

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Cordyceps Sinensis – common names

- *Ophiocordyceps sinensis*
- Caterpillar fungus
- Deer fungus
- Tochukaso
- Tong Chong Xia Cao

"winter worm, summer grass"
Where it can be found?

- Found naturally above 3000 meters above sea level.
- In highlands of
  - China
  - Tibet
  - Nepal
- Industrially produced
Nutritional Contents of Cordyceps

- Hydroxy-Ethyl Adenosine
- Cordyceptic acid
- Cordycepin
- Amino acids
- Polysaccharides
- Vitamin B1, B3, B12
Health benefits of Cordyceps

- Replenishment of health
- Preventing aging
- Improving physical performance
- Increases Energy
  - ATP Production ↑ 30%
  - Oxygen Utilization ↑ 40%
Health benefits of Cordyceps

- Night sweating
- Decreases Appetite
- Decreases Alcohol Desire
- Respiratory disease
- Arrhythmias and other heart diseases.
Health benefits of Cordyceps

- Regulates blood sugar
- Strong anti-oxidation activity
- Antitumor activity
- Immuno-modulating activity
- Increases libido & sexual function
Blood Sugar Regulation with Cordyceps

After taking Cordyceps for 1 week
BEER
WHY BEER?

✓ Thruly naturale product.

✓ Contains numerous bioactive components.

✓ Can promote overal health condition.

✓ Contains low alcohol content, or no alcohol at all.
More facts about Beer

- MOST POPULAR ALCOHOLIC BEVERAGE
- NATURAL PRODUCT
- POSSESS MICRO AND MACRO NUTRIENTS
- PROTEINS
- CARBOHYDRATES
- VITAMINS
- AROMATIC AND BITTER COMPONENTS
- ALCOHOL...
Beer is:

- increasing HDL
- lowering insulin level
- acting as blood thinner
- reduce the risk of developing kidney stones and flush kidneys
- increase bone density
- relaxing effect on the body...
MATERIALS AND METHODS
Raw materials:

- **Cordyceps sinesis** - extract  
  (Cordyceps Super™ by Aloha Medicinals)

- Wort – from local brewery

- Yeast
  - *Saccharomyces pastorianus* – local brewery
  - *Saccharomyces cerevisiae* – baker’s yeast
  - *Sacharomyces cerevisiae K1* – wine yeast
Samples:

- A-sample with beer yeast and *Cordyceps*,
- B – sample with beer yeast,
- C- sample with wine yeast and *Cordyceps*,
- D- sample with wine yeast,
- E- sample with baker yeast and *Cordyceps*,
- D- sample with baker yeast
Sterilization of wort

Cooling at 10 °C

Pitching - 20 mL/L yeast suspension (10^7 cells/mL)

C. synesis / water - 10 mL/L

Fermentation

Sterilization of wort
ANALYSIS

- Beer Alcolyzer (Anton Paar)
- Alcohol
- Real extract
- Degree of fermentation
RESULTS AND DISCUSSION
Cordyceps extract in concentration 50 mg/ml - beer yeast
Cordyceps extract in concentration 50 mg/ml – wine yeast

![Graph showing the effect of Cordyceps extract on fermentation time and alcohol concentration. The graph compares a sample with a control, showing an increase in alcohol percentage over time.](image)
Cordyceps extract in concentration 50 mg/ml – Baker’s yeast
Cordyceps extract in concentration 50 μg/ml - beer yeast

![Graph showing alcohol content over fermentation time for sample and control groups. The graph compares the alcohol content (%) from 0 to 4.5% and fermentation time (h) from 0 to 140 hours.](image-url)
Cordyceps extract in concentration 50 μg/ml – wine yeast
Cordyceps extract in concentration 50 μg/ml – Baker’s yeast

![Graph showing alcohol content over fermentation time with samples and controls.](image-url)
CONCLUSIONS

*Cordyceps* extract in concentration of 50 mg/ml significantly increased fermentation rate when used with beer and wine yeast, while when used with baker’s yeast there was no significant increase of fermentation rate.

*Cordyceps* extract in concentration of 50 μg/ml significantly increased fermentation rate when used with beer yeast, while when used with wine and baker’s yeast there was no significant increase of fermentation rate.
THANK YOU AND CHEERS!