



Effects of Ethanol on Body Structures

Psychology 472: Pharmacology of Psychoactive Drugs

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Mouth

- **Trace amounts absorbed here**
- **Causes**
 - Irritation
 - lesions
 - ulcers
 - oral cancer

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Esophagus

- **Is a tube surrounded by muscles and blood vessels**
- **Has a mucosal lining**
- **Causes**
 - Damage to mucosal lining
 - Esophageal ulcers
 - Esophageal Cancer
 - Esophageal Varices

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Stomach

- **15-20% absorbed here**
- **Stimulates production of HCL**
- **Irritates and damages mucosal lining**
- **Changes the electrical properties of the stomach lining**
- **Gastritis**
- **Ulcers**
- **Achlorhydria**

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Pyloric Valve

- **Spasms in the presence of large amounts of ethanol**

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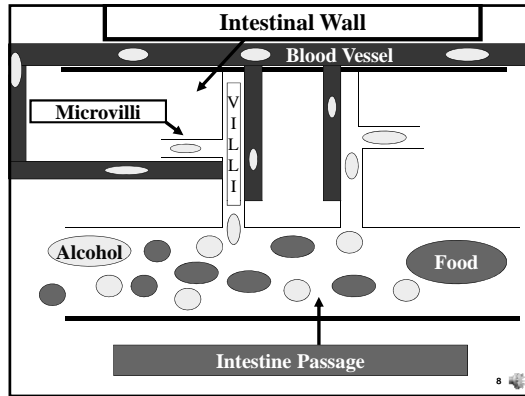
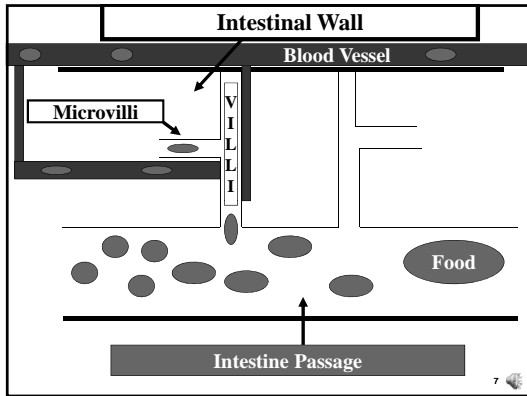


Small Intestine

- **Majority of Ethanol absorbed here**
- **Damages Mucosal Cells, Villi, and Microvilli**
- **Decreases absorption of nutrients and vitamins**
- **Increases Triglyceral and Cholesterol production**

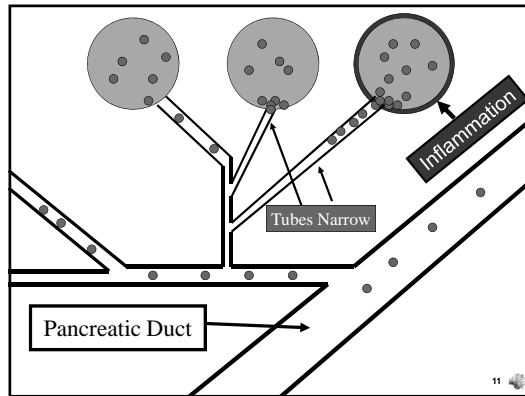
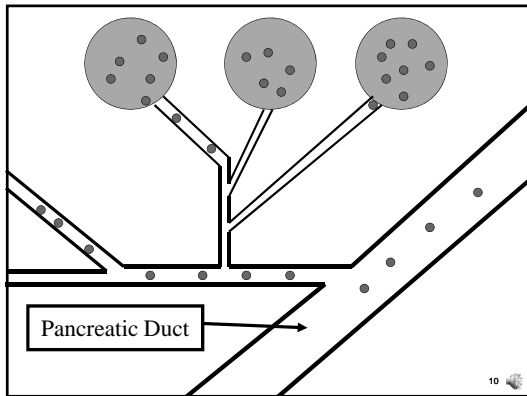
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Pancreas

- Increased concentration of Pancreatic enzymes
- Decreased volume of enzyme secretion
- Pancreatitis
- Decreased insulin production – Secondary Diabetes



Gall Bladder

- Decreased amounts of Bile Secretion

Large Intestine

- **Decreased water and vitamin absorption**
- **Diarrhea**

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Effects on Blood Cells

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RBC

- **Decreased Production**
- **Anemia**

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WBC

- **Decreased production**
- **Decreased response time**
- **Get more infections**
- **Increased risk for STD's/HIV**

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Platelets

- **Decreased production**
- **Decreased clotting time**
- **More bumps and bruises**

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Nervous System

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Neurons

- Alters neuronal membrane (Lipid Bilayer)
- Impacts a variety of receptors
- Causes Demyelination

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Brain Structures

- Alters newer evolutionary structures first, then older structures
- Damages Frontal, Temporal lobes, hippocampus, etc
- Decreases the numbers of dendrites and axons
- Increases Ventricle Size
- Decreases blood flow

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Related Brain Damage

- Blackouts
- Sleep Changes
- Wernicke-Korsakoffs Syndrome
- Other Psychological and Psychiatric problems

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Wernicke-Korsakoffs Syndrome

- Due to a lack of B vitamins
- Results from damage to cortex peripheral nerve cells
- Key symptom is confabulation
 - Get holes in memory so you fill them in.
- Usually STM is the most affected
- Poor Prognosis

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Visual System

- Decreased accommodation time
- Decreases tracking ability
- Double vision
- Decreased recovery time

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Endocrine Effects

- Inhibits Vasopressin release
- Decreases thyroid hormones, progesterone, testosterone, Luteinizing hormone, and others

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Males

- Damages or kills Leydig Cells
- Increases feminine characteristics
- Decreased sexual drive, reproductive failure, impotence

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Females

- Early Menopause
- Premenstrual discomfort
- Increased menstrual Flows
- Infertility

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Muscle Tissue

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Skeletal Muscle

- Disrupts internal structure of the muscle
- Cramps, pain, weakness = Alcoholic Myopathy

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Cardiac

- Increased Weight of the heart
- Dilation of heart chambers
- Scar tissue
- Cardiomyopathy

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Ethanol Effects on the Liver

- Fatty Liver
- Cirrhosis
- Portal Hypertension
- Decreased vitamin production
- Decreased hormones and other products important for body functioning

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Other Issues

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Genetic Differences

- **Decreased ADH metabolic Rates for Europeans**
- **Increased ALDH metabolic rate for Europeans**

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FAS

- **Increased numbers of spontaneous abortions**
- **Endocrine Changes**
- **BAC**

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Drugs

- **Additive effects**
Benzodiazepines
- **Synergistic effects**
Barbiturates
- **Decreased effectiveness**
Antibiotics

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Conclusion

- **Most damaging drug there is**
- **Influence every system**
- **Causes major social/economic problems**
- **Highly correlated with aggression**

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