



Metabolism and Elimination of Ethanol

Psychology 472: Pharmacology of Psychoactive Drugs

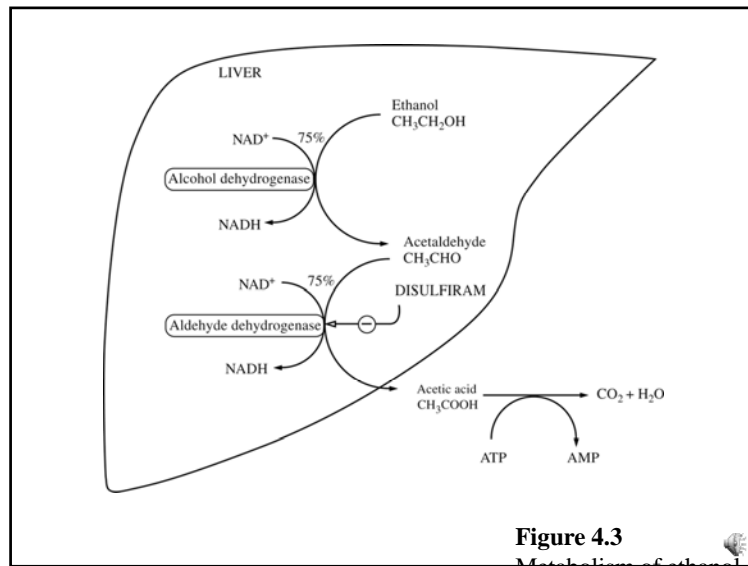
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Methods

- Trace amounts through respiration and sweat.
- Some through fecal material
- Most is metabolized by the liver via two systems

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Alcohol Dehydrogenase System (ADH)

Substance Degrading Enzyme

- | | |
|----------------|------------------------|
| ● Ethanol | Alcohol Dehydrogenase |
| ● Acetaldehyde | Aldehyde Dehydrogenase |
- Need NAD (Nicotinamide Adenine Dinucleotide)
 - Is a co enzyme
 - Is the rate limiting step for reaction

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More Steps

- Acetic Acid
- CO₂ + H₂O
- Respiration
- Urination

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Disulfiram (Antabuse)

- Uses a negative reinforcement model for drinking prevention
- Blocks the production of aldehyde dehydrogenase
 - Acetaldehyde levels increase
 - Causes nausea, vomiting, etc.

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New Fad

- Take a little antabuse and drink alcohol
- Causes you to become flushed, feel hot, etc.
- Kind of gives you a high.
- Too much, bad consequences result.

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Microsomal Ethanol Oxidase System (MEOS)

- | ● Substance | Degrading Enzyme |
|--------------------------------------|------------------------|
| ● Ethanol | MEOS |
| ● Acetaldehyde | Aldehyde Dehydrogenase |
| ● Acetic Acid | |
| ● CO ₂ + H ₂ O | |
| ● Respiration | |
| ● Urination | |

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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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Conclusions

- Lots of impacts on the liver
- Can ultimately create major problems
- Problems are compounded when the person is an alcoholic and has Hepatitis B or C

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