Abstract: In the present study, we investigated the effects of hexamethonium, a ganglionic nicotinic receptor blocking agents and yohimbine, an α₂-adrenergic antagonist, on reduction of ethanol absorption in presence of high acetaldehyde concentration. Hexamethonium had no effect, whereas yohimbine by itself reduced ethanol absorption, but no additional effects were observed with presence of high acetaldehyde. Propionaldehyde had an inhibitory action on intestinal 1-propanol absorption. As both yohimbine and propionaldehyde are associated with vagus nerve activation, these results indirectly support the hypothesis that a cholinergic mechanism through vagus nerve activation is responsible for the inhibition of intestinal ethanol absorption by acetaldehyde. J. Med. Invest. 51:38-42, February, 2004

Keywords: acetaldehyde, ethanol, hexamethonium, intestinal absorption, yohimbine.
The Journal of Medical Investigation Vol. 51 February 2004

**Figure 1:**

**Absorption rate constant (k_a)**

<table>
<thead>
<tr>
<th>Condition</th>
<th>k_a (µm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>1.5 ± 0.2</td>
</tr>
<tr>
<td>CY</td>
<td>1.7 ± 0.3</td>
</tr>
<tr>
<td>CY + YO</td>
<td>1.8 ± 0.4</td>
</tr>
<tr>
<td>C6</td>
<td>2.0 ± 0.5</td>
</tr>
<tr>
<td>CY + C6</td>
<td>2.2 ± 0.6</td>
</tr>
</tbody>
</table>

**Figure 2:**

**Acetaldelyde (µm)**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Acetaldelyde (µm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>750 ± 50</td>
</tr>
<tr>
<td>CY</td>
<td>800 ± 60</td>
</tr>
<tr>
<td>CY + YO</td>
<td>850 ± 70</td>
</tr>
<tr>
<td>C6</td>
<td>900 ± 80</td>
</tr>
<tr>
<td>CY + C6</td>
<td>950 ± 90</td>
</tr>
</tbody>
</table>
H. Kinoshita et al. Ethanol absorption and acetaldehyde

![Graph showing Values of Ka (hr)]

Values of Ka (hr)

<table>
<thead>
<tr>
<th></th>
<th>CONTROL</th>
<th>CY</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
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<tr>
<td>1.5</td>
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</tr>
<tr>
<td>2.0</td>
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<td></td>
</tr>
<tr>
<td>2.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Denotes significance

αl: Ethanol absorption coefficient

β: Rate constant

η: Acetaldehyde production rate

κ: Velocity constant

λ: Diffusion coefficient

μ: Permeability coefficient

ν: Partition coefficient

Ω: Adsorption isotherm parameter

ρ: Density

σ: Surface tension

τ: Temperature

β: Rate constant

η: Acetaldehyde production rate

κ: Velocity constant

λ: Diffusion coefficient

μ: Permeability coefficient

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The Journal of Medical Investigation Vol. 51 February 2004

The page contains a text that appears to be scientific research, discussing various medical topics, possibly related to in vivo studies. However, the text is not entirely legible due to the quality of the image and the language that seems to be a mix of different scripts, making it difficult to transcribe accurately.