Preliminary Report on Injection of "C-Labeled Trans-3-Methyl-2-Hexenoic Acid into Schizophrenic Patients and Controls

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Since the demonstration of a peculiar odor in the sweat of schizophrenic patients in 1960, by Smith and Sines\(^3\), and the identification of the odorous substance as trans-3-methyl-2-hexenoic acid (TMHA) in 1969, by Smith, Thompson, and Koster\(^2\), research has been directed toward the discovery of a metabolic defect which would lead to a better understanding of the illness called schizophrenia. Toward this end, 10 microcuries of \(^{14}\)C-labeled TMHA (Figure 1) was administered intravenously to three schizophrenic patients and three normal control subjects (Table 1), and blood samples were drawn five, 15, 30, 60 and 120 minutes later. Expired air was monitored for \(^{14}\)CO\(_2\) activity in the breath for 2\(\frac{1}{2}\) hours. Urine and sweat were obtained. The disappearance of \(^{14}\)C radioactivity from serum is shown in Figure 2. At the end of two hours, the level of radioactivity had decreased to 30 percent of the five-minute level. There was no significant difference between the decay of radioactivity in the serum of schizophrenic patients and controls. The radioactivity that appeared in the urine and sweat of both groups was primarily in the form of complex molecules and has not yet been fully analyzed.
References


\[
\begin{align*}
\text{CH}_3 & - \text{CH}_2 - \text{CH}_2 - \text{C}_3 = ^{14} \text{C}_2 - \text{C}_1 - \text{OH} \\
& \text{H}
\end{align*}
\]

TRANS-3-METHYL-2-HEXENOIC ACID

FIGURE 1

![Graph showing the disappearance of radioactivity from the serum of schizophrenic patients and normal subjects.](image)

TIME AFTER ADMINISTRATION OF $^{14}$C-TMHA (MINS)

FIGURE 2

The disappearance of radioactivity from the serum of schizophrenic patients and normal subjects. Tenj ci of $^{14}$C-TMHA was administered intravenously and blood samples were drawn. The $^{14}$C-activity in 1 milliliter of serum from each sample was determined.
Table 1.

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>Race</th>
<th>&quot;Odor&quot;</th>
<th>Duration of Illness (Years)</th>
<th>Diagnosis</th>
<th>Patient Symptoms</th>
<th>A.P.A. Criteria</th>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>F</td>
<td>W</td>
<td>+</td>
<td>31</td>
<td>Schizophrenia, hebephrenic type</td>
<td>Silly, mannerisms, auditory hallucinations</td>
<td></td>
<td>Navane, Artane</td>
</tr>
<tr>
<td>54</td>
<td>M</td>
<td>W</td>
<td>+</td>
<td>15</td>
<td>Schizophrenia, paranoid type</td>
<td>Persecutory delusions, wrote to President about communist plot</td>
<td></td>
<td>Thorazine, Artane, Prolinx enanthate</td>
</tr>
<tr>
<td>46</td>
<td>M</td>
<td>W</td>
<td>+</td>
<td>27</td>
<td>Schizophrenia, catatonic type</td>
<td>Negativism, mannerisms, rigidity</td>
<td></td>
<td>Haldol, Multivitamins, Dilantin, Phenobarbital</td>
</tr>
<tr>
<td>K.S.</td>
<td>48FW--</td>
<td></td>
<td></td>
<td></td>
<td>Dilantin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.B.</td>
<td>44FW--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>J.H.</td>
<td>45MW--</td>
<td></td>
<td></td>
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