THE UTILIZATION OF ACETYL METHYL CARBINOL BY STAPHYLOCOCCUS ALBUS AND AUREUS

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The tendency in current literature on staphylococci is to minimize the value of biochemical reactions as a means of differentiation in this group.

Blair in his recent review of the literature on staphylococci is of the opinion that any further attempt at a classification based on biochemical tests would only add to the confusion.

While it is true that the fermentation tests are not as definitive in staphylococci as in other groups, the conflicting reports, by various workers suggest the need for continued experimentation with the fermentation of the carbohydrates.

Work with a number of strains of *Staphylococcus aureus* and *Staphylococcus albus* indicates the possibility of differentiation, to some extent, on the basis of the ability of these organisms to utilize acetyl-methyl-carbinol in their metabolism.

The present study involved 44 strains, of which 26 were *S. aureus* and 18 were *S. albus*.

The *S. aureus* strains were obtained from fresh pathological sources. They were designated as such on the basis of their orange pigment. All were hemolytic in blood agar.

The *S. albus* strains were isolated from non-pathogenic sources. They produced white pigment, and did not exhibit hemolytic properties in blood agar.

Since the object of the study was to investigate the reaction in the specific medium (acetyl-methyl-carbinol), all doubtful cultures were eliminated.

The synthetic medium used was that described by Tittsler.
The selected strains were subjected to the following tests: liquefaction of gelatin, indole, methyl-red, Voges-Proskauer, lactose, sucrose and mannose fermentation, utilization of acetyl-methyl-carbinol.

Only the gelatin, mannose and a.m.c. results were constant after repeated tests, while the others proved to be of little significance.

<table>
<thead>
<tr>
<th></th>
<th>AUREUS</th>
<th>PER CENT</th>
<th>ALBUS</th>
<th>PER CENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gelatin liquefaction</td>
<td>Positive</td>
<td>88</td>
<td>Negative</td>
<td>67</td>
</tr>
<tr>
<td>Mannose fermentation</td>
<td>Positive</td>
<td>88</td>
<td>Negative</td>
<td>64</td>
</tr>
<tr>
<td>A.M.C. utilization</td>
<td>Negative</td>
<td>84</td>
<td>Positive</td>
<td>81</td>
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</table>

*Staphylococcus albus* produced a yellowish turbidity in the acetyl-methyl-carbinol, at 37°C, in 24 to 48 hours.

*Staphylococcus aureus* affected no apparent change in the medium.

Taking chromogenesis as the key test, the results with a.m.c. correlate with this factor more closely than those of gelatin and mannose.

The *S. aureus* cultures which were positive in a.m.c., were irregular in the other tests too. They fermented mannose much more slowly than the other cultures, and the gelatin liquefaction was greatly delayed.

**SUMMARY**

A study involving 44 strains of *Staphylococcus aureus* and *Staphylococcus albus* disclosed the fact that they differ in their reaction when grown in acetyl-methyl-carbinol.

Of the 26 *S. aureus* cultures, designated as such on the basis of their orange pigment, 23 produced no visible change in the medium, while 15 of the 18 *S. albus* cultures produced a yellowish turbidity in 24 to 48 hours.

The results in a.m.c. correlate highly with chromogenesis, gelatin liquefaction, and mannose fermentation.

I wish to thank Dr. Charles A. Stuart of Brown University
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REFERENCES
