Concomitant infection of *Clostridium novyi* (A, B) and *Clostridium sordellii* in mice

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The incrimination of *C. sordellii* in various pathological conditions have encouraged us to investigate the properties of this ignored pathogen and its role in the enhancement of the pathogenicity and this is the objective of this article.

### MATERIAL AND METHODS

Enhancement of the pathogenicity of *Clostridium novyi* type A and *Clostridium novyi* type B by the incorporation of *Clostridium sordellii* sheep and cattle strains: sixty white mice were distributed into six groups of ten each and designated: N, 1/8, 1/16, 1/32, 1/64, and 1/128.

*Clostridium novyi* type B culture was double diluted and 0.5 ml of each dilution was used to inoculate a mouse in the corresponding sub-group.

The procedure was repeated in another group of mice using *C. novyi* B [0.5 ml + 0.25 ml undiluted *C. sordellii* (Sheep) culture].

The pathogenicity of *C. sordellii* (Sheep) alone was tested in a group of 4 mice inoculated with 0.25 ml of each dilution was used to inoculate a mouse in the corresponding sub-group.

This experiment was repeated using *C. novyi* type A and *C. novyi* type A plus *C. sordellii* (Cattle), but here the dilutions used were: N, 1/2, 1/4 and 1/8.

### RESULTS

*Clostridium sordellii* (Sheep and Cattle) strains were found to be non pathogenic, but the addition of *C. sordellii* sheep strain to *Clostridium novyi* type B enhances the pathogenicity of *C. novyi* type B (Table I) and the addition of *C. sordellii* cattle strain was found to enhance the pathogenicity of *C. novyi* type A (Table II).
TABLE I  Deaths among mice inoculated with C. novyi (B), C. sordellii or a mixture of both.

<table>
<thead>
<tr>
<th>Strain</th>
<th>Culture dilution</th>
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<tbody>
<tr>
<td></td>
<td>N 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>8 16 32 64 128</td>
</tr>
<tr>
<td>C. novyi B (0.5 ml)</td>
<td>10 10 10 0 0</td>
</tr>
<tr>
<td>C. novyi B 0.5 ml + C. sordellii 0.25 ml</td>
<td>10 10 10 10 10</td>
</tr>
<tr>
<td>C. sordellii sheep 0.25 ml</td>
<td>0 0 0 0 0</td>
</tr>
</tbody>
</table>

Each inoculum was mixed with 0.25 ml sterile CaCl₂.

TABLE II  Deaths among mice inoculated with C. novyi (A), C. sordellii (cattle) or a mixture of both.

<table>
<thead>
<tr>
<th>Strain</th>
<th>Culture dilution</th>
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<tbody>
<tr>
<td></td>
<td>N 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>2 4 8</td>
</tr>
<tr>
<td>C. novyi (A) 0.5 ml</td>
<td>10 0 0 0</td>
</tr>
<tr>
<td>C. novyi (B) + C. sordellii (cattle)</td>
<td>10 10 10 10 10</td>
</tr>
<tr>
<td>C. sordellii (cattle) 0.25 ml</td>
<td>0 0 10 10 10</td>
</tr>
</tbody>
</table>

Each inoculum was mixed with 0.25 ml sterile CaCl₂.

* The animals were severely infected but did not die.

DISCUSSION

The association of C. sordellii with other organisms in producing a disease was reported by many workers (2, 7, 6). These authors reported the association of C. sordellii and C. perfringens type A with enteric lesions in animals. They suggested that the two bacteria act synergistically in producing enteric disease. Also, ABU-SAMRA et al. (1) isolated from infectious hepatitis (black disease). They concluded that the presence of C. sordellii aggravated and complicated the infection of sheep with C. novyi. The same finding was reported by STERNE and BATTY (10). A result which is substantiated by the present study.

CONCLUSION

The increasing reports incriminating C. sordellii in various diseases warrant further investigation.

REFERENCES
