

LETTERS TO THE EDITOR

The Sporicidal Activity of Phenol

SIR,—Sykes (1958), Bennett (1959) and Cook (1960) have adequately reviewed research on the antibacterial activity of phenolics. Cook (1960) has drawn attention to the lack of published work on the sporicidal efficiency of phenol, and has stated “. . . it has been suggested that some bacterial spores will survive for long periods in 5 per cent phenol, but all attempts by the author to isolate such a spore have so far proved unsuccessful”.

We have been engaged in research into the sporicidal activity in aqueous medium of phenol against *Bacillus subtilis* spores prepared as previously described by Gilbert and Russell (1963).

Spores were treated with 5 per cent w/v phenol for 5 days at 37°, and the number of survivors was determined by plating samples into nutrient agar (Oxoid) at pH 7·4, after diluting the phenol well below its growth inhibitory concentration. Survivor counts were below 10 per cent of the control (phenol absent). This apparent sporicidal effect was less marked when the phenol concentration was reduced to 2·5 per cent w/v.

Two stages can be distinguished in the germination of spores (Lund, 1962; Gould, Hitchens and Hurst, 1963): (i) initiation—the spores, called “bright” spores, lose their refractivity and heat resistance and stain readily: (ii) outgrowth—in which the spores swell and the vegetative cell is released. Recent work has shown that L- alanine and D- glucose stimulate spore germination (e.g. Powell, 1957) and it was thought that the addition of these substances at optimal concentrations to the recovery media might increase the number of survivors. This was found to be so and it thus seems probable that high concentrations of phenol can inhibit some stage or stages in the germination of spores of this organism. It is of interest to note that Lund (1962) has found that the initiation stage in various strains of *B. subtilis* was inhibited by phenol as distinct from cetrimide which allowed initiation to proceed but prevented outgrowth. Lund (1962) also showed that a 2·5 per cent w/v solution of phenol had some sporicidal effect at both 25° and 37° but this was not marked.

The practical importance of reviving phenol-treated bacteria has been stressed by Bennett (1959), and it would obviously be of value to test recovery media of this type on bacilli after treatment of spores with various phenolic compounds. The resistance to phenolic compounds of spores prepared by other methods, e.g. 7-day or 14-day old spores instead of 2-day old spores as used here, with or without pre-heating, could also be tested.

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May 16, 1963

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