

## THE ISOLATION OF *PSEUDOMONAS PSEUDOMALLEI* FROM SOIL IN NORTH QUEENSLAND

Evidence is well documented that *Pseudomonas pseudomallei*, the cause of melioidosis in animals and man, is a soil organism that occurs mainly in tropical and sub-tropical climates (Chambon 1955; Fournier 1965; Jayanetra *et al* 1974).

The first recorded isolations of this organism in animals in Australia have been in sheep (Cottew 1950), goats (Lewis and Olds 1952), pigs (Olds and Lewis 1955), cattle and horses (Laws and Hall 1963), and in orang-outang (Tammemagi and Johnston 1963). Rimington (1962) recorded the first human case in Australia.

Laws and Hall (1964) reported the isolation of *Ps. pseudomallei* from 2 muddy water samples on a sheep property near Townsville but had no recorded success with isolation from the soil.

This letter is to report the isolation of 9 strains of *Ps. pseudomallei* from the soil and 3 strains from muddy water that drained into artificially-made holes in a 5 ha sheep paddock at the Animal Health Station, Oonoonba, where natural infections occur yearly during the wet season. The morphological, cultural and biochemical characteristics of the isolates agreed with those set down by Cottew (1950) and Laws (1964).

Soil samples were collected from the paddock and particularly from areas where the flock tended to congregate, such as water troughs and shady areas. Samples of 50 g of soil were placed in sterile glass containers to which 100 ml of sterile distilled water was added and the mixture shaken vigorously. After allowing the samples to stand for 18 to 20 hr, the suspension was centrifuged and the surface of the sediment inoculated into 0.1 l amounts of MacConkey broth (purple)\* containing crystal violet (0.001%), crystalline sodium penicillin (25 units per ml) and streptomycin sulphate (50 units per ml). After 96 hours incubation at 37°C, surface liquid was drawn off and plated into MacConkey agar† and Salmonella-Shigella agar‡.

Positive strains were tested for pathogenicity in guinea pigs, where death occurred within 1-5 days of inter-peritoneal injection and *Ps. pseudomallei* was recoverable.

Muddy water and surface water samples were treated similarly except that all were inoculated into guinea pigs as a primary isolation media along with

processing through MacConkey broth. Where the organism was present, death of the guinea pig occurred within 5-7 days.

The 9 positive soil samples represent 1.7% of the 540 soil samples processed to date and the 3 positive water samples, 10%. Ellison *et al* (1969) recorded readings of 1.9% (1078 soil samples) and 2.9% (1120 water samples) from a tin mining pool in Malaysia, while Strauss *et al* (1969) reported *Ps. pseudomallei* isolations from water samples over a large area of West Malaysia as 8.8% from cleared fields, 14.6% from wet rice fields, 3.0% from tin mining pools and 8.6% from marshy areas. The latter area which was classified as land having a high water table and tall grasses resembles the low lying paddocks around Townsville during the wet season.

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8 July 1977

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\*†‡Oxoid, Abbott Laboratories, Kurnell, New South Wales.