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*Lab Anim* 1974 8: 275
DOI: 10.1258/002367774780943670

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>> Version of Record - Sep 1, 1974

What is This?
THE ISOLATION OF
STREPTOBACILLUS MONILIFORMIS FROM
CERVICAL ABSCESSSES OF GUINEA-PIGS

by

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The isolation of Streptobacillus moniliformis from guinea-pigs and the characteristics of the isolate were fully described by Smith (1941). He showed that the organism differed from strains of S. moniliformis previously isolated from mice and rats in that strictly anaerobic conditions were required for culture and that its pathogenic action was exclusively pyogenic in mice, rats, guinea-pigs and rabbits.

Fig. 1. Pus from cervical abscess showing bacillary forms. Line represents 10 μm.

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An investigation of an outbreak of typical cervical adenitis in a conventional colony of guinea-pigs was carried out, as attempts to isolate the causal organism by the routine methods for the isolation of *S. moniliformis* from mice and rats had failed.

Smears of pus from cervical abscesses were stained by Gram's method: 2 showed a Gram-negative, amorphous background with numerous polymorphs (Fig. 1). Material from an abscess was inoculated onto 30% serum-agar plates and incubated under both aerobic and anaerobic conditions. After 4 days small colonies 1 mm in diameter were visible on both aerobic and anaerobic plates. However, when subcultured the organism would only grow anaerobically. On primary culture, the organism appeared as small Gram-negative bacilli, but after passage on media it became more filamentous with swellings typical of the morphology of *Streptobacillus moniliformis* (Figs 2 and 3).

No biochemical activity could be demonstrated. Carbohydrates were not fermented, urea was not split, and there was no indole production. An acid extraction of the organism was precipitated by an antiserum to a rat isolate of *S. moniliformis* using the Lancefield technique.

Intraperitoneal injection of mice with a 24 h broth culture of the organism caused death within 3 days with multiple hepatic and splenic abscesses. Footpad injection of mice produced no reaction. Subcutaneous injection of guinea-pigs resulted in abscess formation at the inoculation site and recovery of the organism from the pus. A cervical lymph-node abscess developed in 1 of the 6 guinea-pigs inoculated subcutaneously.

These results confirmed Smith's findings that isolates of *S. moniliformis* from guinea-pigs are not identical to those from mice and rats. Firstly, the organism only grew anaerobically except on primary inoculation, when it was thought that the presence of pus allowed growth under aerobic conditions. Secondly, the isolate from guinea-pigs was biochemically inert, in contrast to mouse and rat isolates, which do give a few biochemical reactions (J. Birkinshaw, personal communication, 1972). Thirdly, intraperitoneal inoculation of mice with a guinea-pig isolate causes death with abscess formation, whereas inoculation with a rat isolate causes death from septicaemia. Also, footpad inoculation of mice causes no lesions in contrast to the arthritis which develops following rat isolate injection.

These findings emphasize the need to incubate cultures anaerobically when attempting to isolate *S. moniliformis* from guinea-pigs.

ACKNOWLEDGEMENT

The authors would like to thank Dr R. Olds, of the Department of Pathology, Cambridge University, for confirming the identity of the organisms.
Fig. 2. Culture after passage of *Streptobacillus moniliformis* isolated from cervical abscess in a guinea-pig. Line represents 10 μm.

Fig. 3. Culture of *Streptobacillus moniliformis* isolated from the ear of a rat. Line represents 10 μm.

REFERENCE