

17141. Further Investigations on *Donovania granulomatis*.

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It has been suggested elsewhere^{1,2} that *Donovania granulomatis*, the etiological agent of granuloma inguinale,³ may be a member of the tribe *Eschericheae* and be related to the genus *Klebsiella*. In this connection it was of interest to examine the carbohydrate fermentation reactions of *D. granulomatis*. Members of the *Klebsiella* group are known to vary widely in their capacity to ferment sugars, the *K. pneumoniae* group being the most active and *K. rhinoscleromatis* the least.

For the present investigation both solid and fluid media were used. These have been described in detail elsewhere.⁴ In brief, the fluid medium was a beef heart infusion broth without the usual added glucose but with the various sugars listed in Table I added to a final concentration of 1% and with Andrade's indicator. The solid medium was a Levinthal beef heart agar again without the usual added glucose but with the same sugars to a final concentration of 1% and with Andrade's indicator. The results are shown in Table I.

All fermentation tests were held for 4 weeks. It will be noted that in broth only the 3 monosaccharides, glucose, fructose and galactose were fermented, while on solid medium there was also a delayed fermentation of maltose. In no case was any gas produced. In general *D. granulomatis* would seem to be even less active than *K. rhinoscleromatis* but from the point of view of these biochemical reactions could fit into the pattern of the *Klebsiellae*.

TABLE I.
Fermentation Reactions of *D. granulomatis*.

	Broth	Agar
Glucose	+	(5)*
Fructose	+	(6)
Galactose	+	(6)
Maltose	0	+
Sucrose	0	0
Lactose	0	0
Mannitol	0	0
Inositol	0	0

* Indicates that signs of acid formation were first noted on the 5th day.

Further studies have been carried out on the sensitivity of *D. granulomatis* to the different streptomycins. The *in vitro* sensitivity has proved to be particularly high, over 3 times as high as the next most sensitive organism. In Table II the minimum inhibiting concentrations of the pure streptomycins are shown and compared to the next most sensitive organism encountered—the BCG strain of *M. tuberculosis* var. bovis—and to *K. pneumoniae*, an organism of greater than average sensitivity.

Summary. *D. granulomatis* shows delayed fermentation of a few carbohydrates, chiefly monosaccharides, without gas formation. In this respect it resembles *K. rhinoscleromatis*. Its sensitivity is high against all the pure streptomycins and cases of granuloma inguinale should react as favorably to treatment with dihydrostreptomycin as to treatment with streptomycin itself.

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TABLE II.
In vitro Sensitivity Against Pure Streptomycins.

Organism	Streptomycin	Dihydrostreptomycin	Mannosidostreptomycin	Dihydromannosidostreptomycin
<i>D. granulomatis</i>	0.167	0.151	0.595	0.446
<i>K. pneumoniae</i>	1.76	1.76	6.39	6.59
<i>M. tuberculosis</i> (strain BCG)	0.52	0.55	1.9	1.7

¹ Rake, G., *Am. J. Syph., Gon. and Ven. Dis.*, 1948, **32**, 150.

² Rake, G., *J. Bact.*, 1948, **55**, 865.

³ Anderson, K., *Science*, 1943, **97**, 560.

⁴ Rake, G., and Oskay, J. J., *J. Bact.*, 1948, **55**, 667.