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Relative frequency of B. coli communior in contaminated water.

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Some recent work of my students has been interesting in connection with the relative frequency of occurrence of the species of the *B. coli* group in water contaminated with human feces. The *B. coli* group consists of four species: *B. communior* (Durham), *B. communis* (Escherich), *B. aerogenes* (Escherich), *B. acidi lactici* (Hueppe). The general characteristics common to all species are: short, Gram-negative, cocco-bacilli, with rounded ends, non-spore bearing, fermentation of dextrose, glucose and lactose with gas production, non-liquefaction of gelatin after 14 days, indol production, and reduction of nitrates to nitrites. In general, also, litmus milk is acidified and coagulated. Further differentiation of the members of the group is possible by means of fermentation tests in the sugars dulcite, saccharose, mannite and raffinose. *B. communior* and *B. communis* ferment dulcite; *B. aerogenes* and *acidi lactici* do not. *B. communior* and *B. aerogenes* ferment saccharose. *B. communis* and *B. acidi lactici* do not. MacConkey[1] isolated a large number of strains of these species from feces and found that their relative frequency was as follows:

	Per Cent.
B. communior	23
B. communis	37
B. aerogenes	15
B. acidi lactici	25

Graham Smith[2] in the analysis of thirty-five strains isolated from flies found, on the other hand, a predominance of *communior* (43 per cent.), *communis* occurring much less frequently (17 per cent.). *B. aerogenes* (11 per cent.) and *B. acidi lactici* (29 per cent.) did not differ greatly in their occurrence.

Winslow and Walker[3] in twenty-five strains isolated from

[1] MacConkey, *Journal Hygiene*, 1905, Vol. 5, p. 333.

[2] Graham-Smith, Report of Local Government Board, London, 1909.

[3] Winslow and Walker, *Science*, 1907, Vol. 26, p. 675.

feces found 28 per cent. of *communior*, 60 per cent. *communis*, 4 per cent. *aerogenes*, and 8 per cent. *acidi lactici*.

The results of an analysis of thirty-two strains isolated in my laboratory from human feces were as follows:

	Per Cent.
B. coli communior	65
B. coli communis	28
B. aerogenes	3.5
B. acidi lactici	3.5

The saccharose fermenting species, then, may predominate in water recently contaminated with human feces.

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Production of creatinine by bacteria.

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Very little work has been done to determine whether creatinine is produced by bacteria growing on media free from creatin and creatinine. Germán,[1] in a brief review of the literature on this subject, makes mention of only three contributions. In his paper, Germán gives the result of an investigation of thirty-five species of bacteria to determine whether they were able to produce creatinine. In summing up, he says that this characteristic might be of value in the differentiation of closely allied species.

Our work was undertaken to ascertain: (1) Whether creatinine production is of any value in the differentiation of groups of closely allied species; (2) to determine the method best suited for studying creatinine production by bacteria; (3) to ascertain what amounts of creatinine were produced so that certain quantitative studies might be undertaken.

A medium composed of 2 per cent. Witte's peptone and .5 per cent. salt furnishes a creatin and creatinine free medium. Twenty-eight strains of bacteria, belonging to the mucosus capsulatus group of microörganisms, including *B. rhinoscleromatis*, *B. ozænæ* and *B. lactis aerogenes*, were grown on the above medium for eight

[1] Germán, *Centralbl. f. Bakt.*, I. Abt. Orig., Bd. 63, Heft 7, 1 June, 1912.