DNA HOMOLOGY IN THE THREE TYPES OF *CORYNEBACTERIUM RENALE*

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Three types of *Corynebacterium renale* have been known to differ from each other in the antigenicity of the cell wall, biochemical properties, nutritional requirements, piliation, lysogeny, and virulence. Their difference according to the deoxyribonucleic acid (DNA) base composition was also ascertained. This study was undertaken to determine the relation among the three types of *C. renale* by the DNA hybridization technique.

^{3}H uridine was used to label DNA of *C. renale* because ^{3}H thymidine was found not to be incorporated in the DNA due to lack of bacterial thymidine kinase. The labeled DNA was then extracted from the cells of *C. renale* and purified. The labeled DNA was sheared sonically and denatured by boiling before use. Unlabeled DNA from the cells of *C. renale* and other strains was denatured by boiling and immobilized on membrane filters (Millipore filter VCWP pore size 100 mμ). These filters were incubated in the preincubation mixture according to the Denhardt method. Then they were hybridized with the labeled sheared DNA in 6×SSC (SSC: standard saline citrate). After hybridization, the filters were removed from 6×SSC and finally placed in vials containing a toluene scintillation solution. They were assayed for radioactivity in a liquid scintillation counter. After the necessary corrections, DNA hybridization rates were calculated and compared.

C. renale type I (ATCC 10848) DNA had 45% homology with type II (No. 46) DNA and only 15% with type III (No. 42) DNA. Type II DNA had 66% homology with type I DNA and 71% with type III DNA. Type III DNA had 47% homology with type I DNA and 57% with type II DNA. The DNA of *C. renale* types I, II and III had respectively 9%, 33% and 15% homology to that of *C. pseudotuberculosis*, which is known to be phenotypically closest to *C. renale*. Each DNA of the three types had negligible homology with that of *E. coli*.

The DNA hybridization data indicate that the relation of type I to type II is closer than that of type I to type III. As a result of this study, it is also clear that *C. pseudotuberculosis* is not so close to *C. renale* as the three types of *C. renale* are to one another.