Plaque-Forming Recombinants between Bacteriophage P1 and R factor NR1 and their Behaviour in Lysogenic Conditions

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The progeny of bacteriophage P1 propagated in a strain of *Escherichia coli* harboring the R factor NR1 was submitted to a stepwise enrichment for plaque-forming P1 derivatives which transduced drug resistance determinants at high frequency. From these preparations PICM and PITC phage strains were isolated which carry determinants for resistance to chloramphenicol and to tetracycline, respectively, in their genomes. By recombination between PICM and PITC doubly resistant PICMTC was also obtained.

Various properties of a few of these plaque-forming transducing phages were compared with those of wild type P1. All derivatives tested reproduce vegetatively with the same latent period as P1. Some of them give a smaller burst size and form smaller plaques than P1. The phage particles of some of the derivatives giving small plaques have a higher buoyant density than P1. All P1 derivatives studied lysogenize well

and the prophage is stably propagated by the lysogenic strains produced. With PICM and PITC the formation and the properties of rare doubly lysogenic strains were studied after selection of CM1⁺ TCr colonies on medium containing the two antibiotics. Some of the stable strains thus isolated carried a PICMTC prophage

while others could not yet be characterized unequivocally. Apparently the most frequent CMr TO⁺ strains are unstable double lysogens and segregate in the absence of the antibiotics either single lysogens carrying one or the other of the two prophages or nonlysogenic bacteria having lost all detectable prophage material.