

SECONDARY LIFE CYCLE OF *NOCARDIA CORALLINA*¹

J. B. CLARK AND JANICE FRADY

Department of Plant Sciences, University of Oklahoma, Norman, Oklahoma

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Previous work (Webb and Clark, *J. Bacteriol.*, **74**, 31-42, 1957) has shown the life cycle of *Nocardia corallina* to be as follows: the uninuclear diploid coccoidal cell germinates to yield diploid coenocytic hyphae; the hyphae reach a maximum stage of growth and fragment by reduction division to yield binucleated haploid bacillary cells; the nuclei of the bacillary cells then fuse to form the uninucleate diploid coccoids. Fusion tubes were found during the fragmentation process. These initial studies suggested that once the coccoidal cell was formed in the life cycle, no further activity occurred other than coccoidal cell division.

Many radiation response experiments done on *N. corallina* yielded results which could not adequately be explained if the actual life cycle terminated with the formation of the coccoidal cell. Therefore, the problem was reinvestigated, using the crystal violet nuclear stain (Chance, *Stain*

Technol., **27**, 253-258, 1952) as the sole cytological procedure.

The results obtained showed that a modified secondary life cycle occurs after the formation of the coccoidal cell. This cycle was variable but in general involved a change from coccoidal cells to bacillary cells without involving normal hyphal growth. In some cases fragmentary hyphae were found, but the predominate cells in cultures up to 10 days old were coccoids and bacilli. Ploidy determinations were not carried out on the cells of this secondary life cycle, but radiation studies indicate that they are similar to their counterpart in the primary life cycle. No uniformity was detected in this cycle, but bacillary cells were found in all cultures tested, which included 10 day cultures. The percentage of bacillary cells varied considerably depending on age of the culture and cultural conditions.

The antigermination factor and fragmentation factor previously reported apparently involve only the hyphal development and fragmentation of the primary life cycle.

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