

Serratia been shown
to be antimalarial,
antifungal,

Literature



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Serratia is a gram-negative that is able to produce the antibiotic 1-carbapen-2-carboxylic acid and the red pigment prodigiosin. The bacterium causes nosocomial infections and as a result has become an issue due to its multidrug resistant nature due to the fact that it tends to cause nosocomial infections. It is also able to colonize and survive various environments such as the soil water air and plants because of their ability to produce a variety of extracellular products including proteases, lipases, chitinases, nucleases, surfactants and wetting agents.

Prodigiosin is a red pigment that plays a role in the survival of Serratia species. Prodigiosin is considered a secondary metabolic pathway. It is a product of a bifurcated pathway, formed by the products of the MBC and MAP pathways. Prodigiosin is known to perform immunosuppressant activities without affecting antibody formation. Prodigiosin has also been shown to be antimalarial, antifungal, antibacterial and antiprotozoal. An operon is a functional unit of DNA that regulates the other genes involved in protein synthesis. The genes involved in prodigiosin biosynthesis are pigA-o.

Pig A is responsible for L-Prolyl-PCP dehydrogenase, pigC is responsible for phosphotransferase, pigE is responsible for aminotransferase, pigF is responsible for O-Methyltransferase, pigG is responsible for peptidyl carrier protein (PCP), pigH is responsible for aminotransferase, pigI is responsible for L-Prolyl-AMP ligase, pigJ is responsible for β -Ketomyristol-ACP synthase, pigL is responsible for 4'-Phosphopantetheinyltransferase, pigN is responsible for oxidoreductase pigB, pigD, pigK, pigM, and pigO have no assigned function. It is presumed that the pig cluster is organised from pigA-pigN. The cosmid pNRT1 and pNRT104 were identified using cosmid complementation <https://assignbuster.com/serratia-been-shown-to-be-antimalarial-antifungal/>

and were found to be similar to the *E. carotovora* cosmid cWU142 that was known to have the *car*-related genes. Southern blotting hybridization was then performed to detect non vector homology.

The fragment was then cloned and sequenced. The sequencing revealed 8 open reading frames downstream from the *carR* gene. A chromosomal library was used to modify the *E. coli*. The pNRT104 co plasmid was transferred into *E.*

carotovora colonies using transposons and the colonies produced a red pigment indicating that pNRT104 cosmid was the prodigiosin gene sequence. Restriction analyses were used to isolate genes and sequencing showed that the cluster contained 14 genes.