An organism was isolated from the soil and was found to produce extracellular rifamycin oxidase which transformed inactive rifamycin B to active rifamycin S via rifamycin O. The organism was identified as a fungus Curvularia lunata var. aeria. The medium and growth conditions in shake flask were optimised for maximum enzyme production. Different carbon and nitrogen sources and growth factors were used. Experiments were carried out with different synthetic media for the growth and production of enzyme. Effects of glucose concentration on the production of intracellular black pigment and extracellular rifamycin oxidase were also studied. Relevant biokinetic parameters were estimated at various values of the culture pH and temperatures of incubation. Several divalent metal ions were used in the growth medium in order to increase the growth as well as enzyme production. A batch reactor was run at different agitation and aeration conditions. The mass transfer coefficients were found out at a number of substrate concentrations in the reactor. Substrate concentration was increased in the reactor by controlling the cultivation pH. This was done in order to maximise enzyme production. Mass transfer coefficients were also calculated at different agitation and aeration rates. Biokinetic parameters were calculated for the well-mixed batch reactor.

The enzyme was concentrated in a tangential flow filtration system and partially purified by Gel filtration chromatography. This enzyme was physically characterized for pH and temperature optima. Thermostability of rifamycin oxidase was checked at different temperatures of incubation. K_m and V_{max} of the enzyme was found out. Metal ion effects on enzyme activity were also determined.

The enzyme was immobilized on different carriers by the entrapment method. The immobilized enzyme preparations were also physically characterised for pH and temperature optima. Transformation of rifamycin B to rifamycin S was carried out with soluble as well as immobilized enzyme and the transformation conditions were also optimised in both the cases. Immobilized enzyme preparations on different carriers were also reused. Biotransformation experiments were also carried out with growing as well as resting cells of C. lunata.