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Review of Inhibitor of RNase Present in Testes

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INTRODUCTION

RNase present in testes is inhibited by non-competitive inhibition by drug metosartan and the inhibition is so potent which results in drastic change of enzyme V_{max} when inhibitor binds it than compared with the substrate. K_i of enzyme was found to be -1000 and the enzymatic reaction may be inhibited completely as the ratio of I/K_i was found to be -1.6. The RNase currently present in testes was unknown with pI of 9.2 whereas RNase A was another RNase present in testes along with unknown enzyme with pI of 9.6.

Non-competitive inhibition is an example of reversible inhibition in which Km remains constant whereas V_{max} is increased. In this type of inhibition the enzyme has sites to bind both the inhibitor and substrate. Binding of inhibitor or drug leads to change in shape of the enzyme, so the substrate cannot bind to the enzyme any more leading to decrease in reaction velocity or inhibition of the reaction completely. Ki is normally used to know the potentiality of the drug. If the ratio of I/K_i is >1 the drug is so potential, whereas ratio between 0.1-1.0 indicate medium and <0.1 indicates low potentiality. Some of the examples of enzymes that undergo non-competitive inhibition include DNA polymerase α, HIV reverse transcriptase and CYP 450 with different drugs.

One of the recent advances in science includes finding about drug metosartan that it causes non-competitive inhibition of one of the RNase present in the testes in addition to RNase A, whereas the same drug causes non-competitive inhibition of Bovine RNase A along with allosteric inhibition by acting as positive modulator of the enzyme. The K_i of the drug metosartan on RNase was found to be -1000 and inhibitor concentration was found to be 1.6 and 3.4 mm the ratio of I/Ki was found to be -1.6. From the ratio it proves that the drug is highly potent as the ratio is >1.

Competitive inhibition is also possible with the enzyme but especially at higher concentrations of drug compared to the substrate as clear from the line weaver Burk graphs of Beeram et al. [1] **(Figure 1)**.

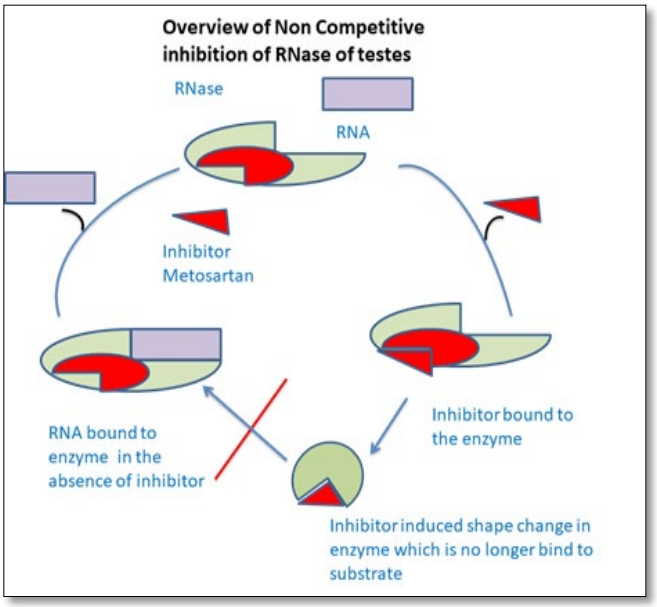

Figure 1. Line weaver Burk graphs.

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