



LAB 7

**The inhibition of acid phosphatase
by inorganic phosphate.**

K_2HPO_4

Aims :

1. To study the affect of inhibitor in enzymatic reaction.
2. To know the type of inhibition.

INTRODUCTION

Inhibitors: are substance that combine with enzyme and decrease it is activity.

Type of inhibitors:

1. Irreversible inhibitors

1. Reversible inhibitors

- competitive
- Non competitive
- Un competitive

Irreversible inhibitors:



- inhibitors bind covalently with enzyme and permanently modifying active site residues(functional group) which the enzyme become inactive.
- inhibitors can not be removed by dialysis or other way

Reversible inhibitors:



- Reversible reaction
- Bind with the enzyme by non covalent bond
- Inhibitors can be removed by dialysis (i.e. removal of the inhibitor restores enzyme activity)

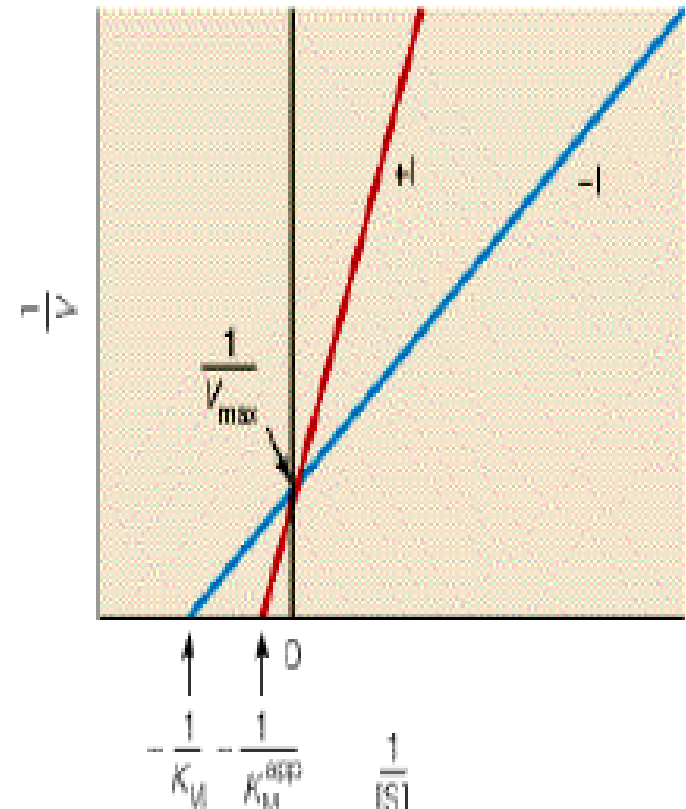
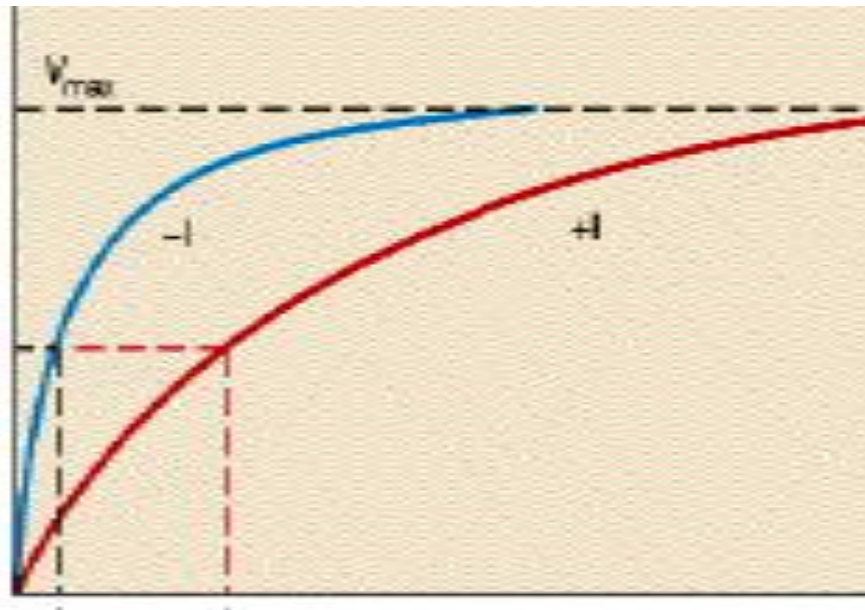
Competitive inhibitors:

The substrate and inhibitors have the resemble structure which the inhibitors competitive the S to bind the E.

The inhibitor bind with enzyme

The V_{max} same (with I OR without I)

K_m high and affinity low (with I)



Non competitive inhibitors

The inhibitors' can bind with E or ES complex.



Inhibitors bind with site on the enzyme other than active site

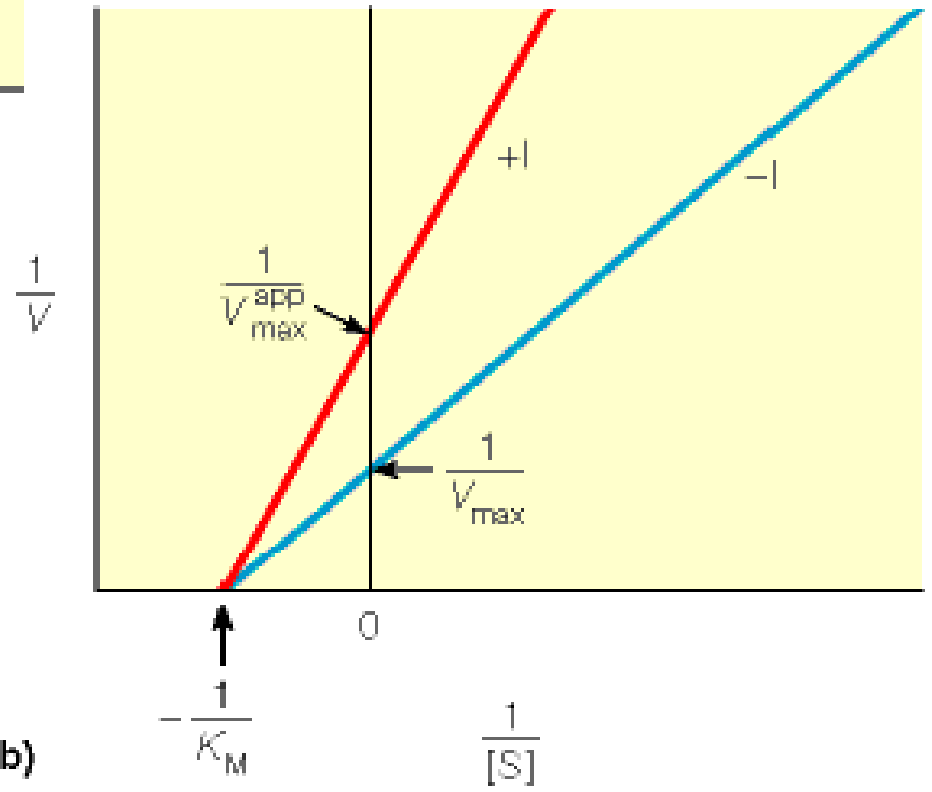
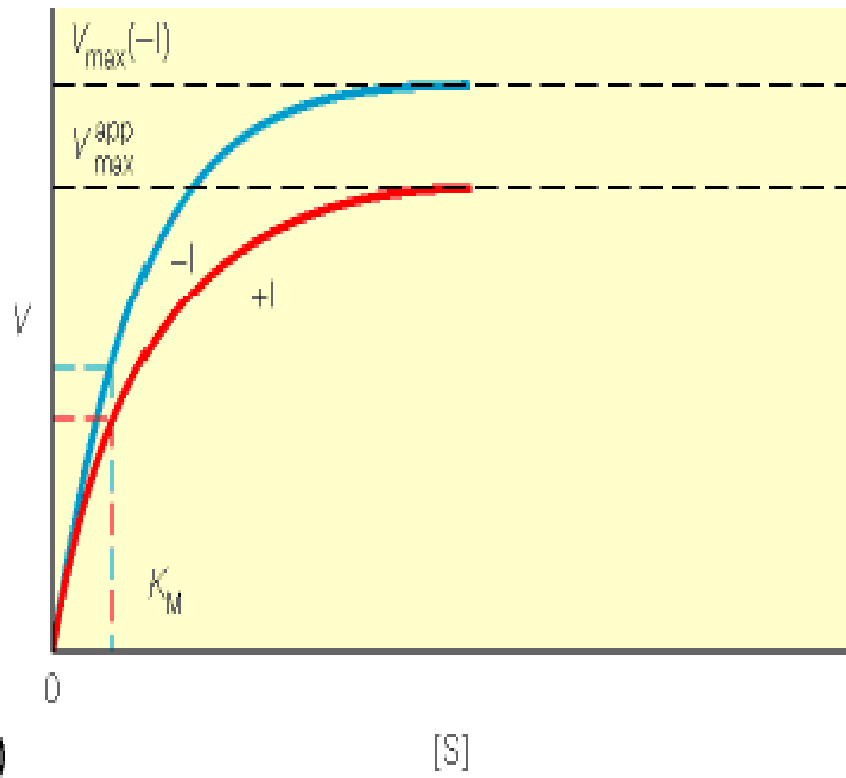
Have the same K_m and low V_{max}

$(1/V_{max} \text{ with } I > 1/V_{max} \text{ without})$

Inhibitors' not reassembly to substrate structure

The inhibitors not competitive the S

Increase $[S]$ not remove I



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(b)

Un competitive

The inhibitors not bind with the free enzyme, bind with ES complex.



Vmax and Km low

