Laboratory of biophysics

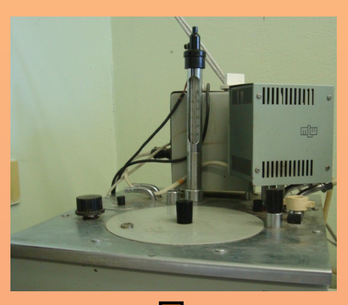
Trypsin inhibitors from *Brassica rapa*

Belashkin I.[1,8], Bystrova A.[2], Gitelzon P.[3], Zakirova A.[4,5], Shestakova V.[6,7]
[1] Lomonosov Moscow State University, Moscow, Russia
[2] Riga Technical University, Riga, Latvia
[3] Pirogov Russian National Research Medical University, Moscow, Russia
[4] South Ural State Medical University, Chelyabinsk, Russia
[5] MBOU «Lyceum № 39», Ozersk, Russia
[6] National Research Nuclear University MEPhI, Moscow, Russia
[7] KOGOAU Gymnasium №1, Kirovo-Chepetsk, Russia
[8] Advanced Science and Education Center, department of MSU, Kolmogorov school, Moscow, Russia

Homogenization

Extraction, filtration

Thermocoagulation

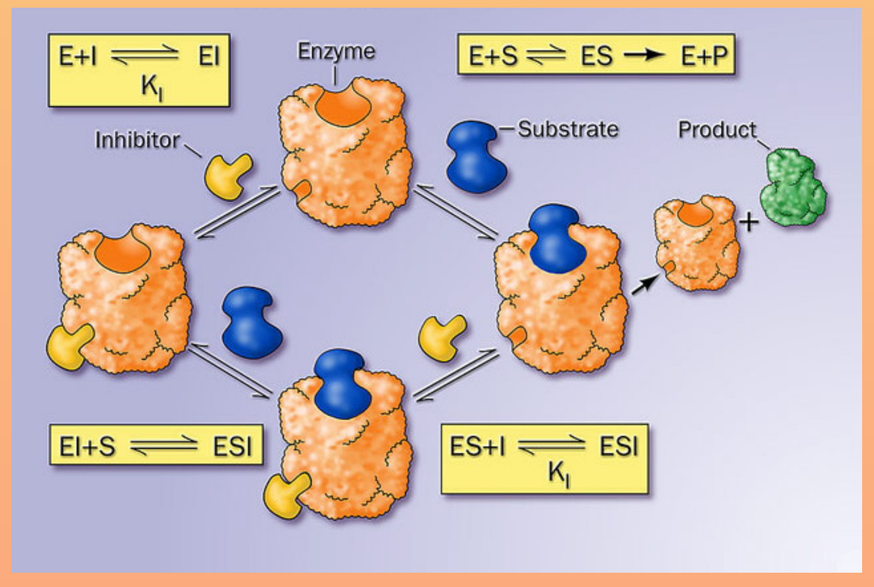


Concentration

Purpose: isolation and purification of trypsin inhibitors from *Brassica rapa* and studying their inhibition mechanisms.

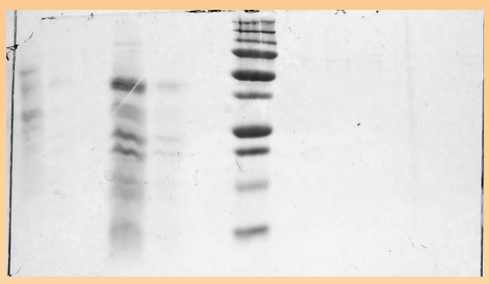
Results:

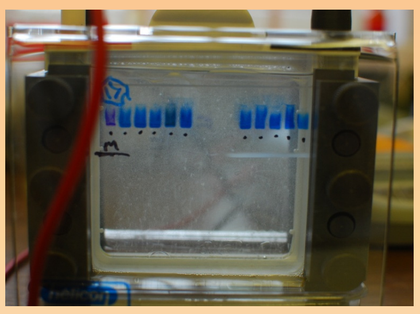
1) We isolated trypsin from the model pest,
2) isolated pure protein from *Brassica rapa* using affinity chromatography,
3) measured its concentration with Bradford and BCA methods,
4) tested inhibitor activity,
5) and determined inhibition type.



Affinity chromatography

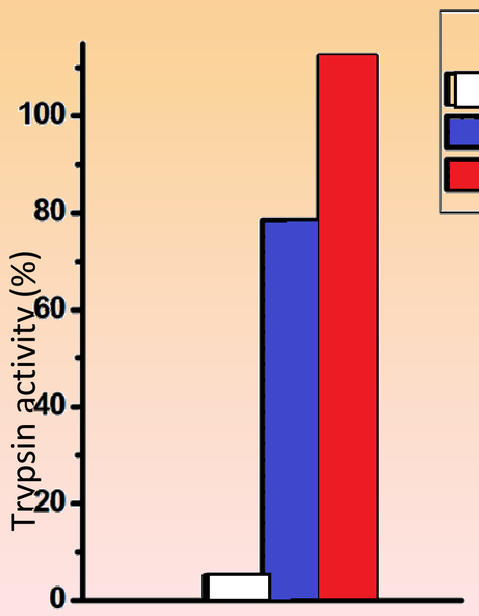
Electrophoresis





1 – first extract
2 – extract after thermocoagulation
3– lower fraction after 3kDa filter
4 – protein concentrate
5 - washing 1
6 - washing 2
7 – washing 3
8 – eluate 1
9 – eluate 2
10 – eluate 3

Conclusions: we obtained trypsin inhibitor solution from Brassica rapa of 300 µg/ml concentration and measured its inhibition constants K_I= 34 nM и K_I`= 490 nM.



Activity test

Ion exchange chromatography

Concentration

Homogenization

Extraction, filtration