



**VISIT TO
UNIVERSITY RESEARCH LABORATORIES
OSMANIA UNIVERSITY OPEN DAY CELEBRATIONS
OSMANIA TAKSH-2022
24th March 2022**

Invitation for "OU OPEN DAY"



OSMANIA UNIVERSITY

OSMANIA TAKSH-2022

**Centre for Microbial and
Fermentation Technology (CMFT)**

**A Centre of Excellence of OU under
MHRD- RUSA 2.0 at the Dept of MICROBIOLOGY**

Invites you for "OPEN DAY" on

24TH MARCH 2022

CMFT puts forward an opportunity for school, college (UG & PG) Students to visit our campus and take a tour of our CMFT lab facilities and research activities.

Probiotics

Toddy palm Nector (TPN)

Bioethanol from Lignocellulosics

Mushroom cultivation

HPLC Grade Water facility

Venue:
CMFT,
Dep of Microbiology,
Osmania University,
Hyderabad, TS, 500007.

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Following students belonging to department of Microbiology and biotechnology streams from Government Degree college , Kukatpally attended Osmania university, Osmania Taksh open day at Departments of Microbiology, Biotechnology and Genetics and CPMB at Osmania University on 24/03/2022.

S.No	Name of the Student	Roll No	Group	Semester
1	Ch.Hariprasad	203919457110	MZC	VI
2	Jemima	203919458030	MBC	VI
3	M.Tejaswini	203919458081	MBC	VI
4	Bitla Sumanth Kumar	203919457029	MZC	VI
5	Thrimurthi	203919457109	MZC	VI
6	Suresh	203919457013	MZC	VI
7	Ghousea Samee	203920487002	MBTC	IV
8	V. Hari Narayana	203920487006	MBTC	IV
9	Sanjeeva Paulraj	203920457013	MZC	IV
10	T.Yeshwanth	203920457014	MZC	IV
11	Y.Ramadevi	203920487007	MBTC	IV
12	N.Varshitha	203921448006	MBTZ	II
13	K.Dathatreya	203919458065	MBC	VI
14	K.Manjula	203919489066	BtZC	VI
15	K.Pallavi	203919489070	BtZC	VI
16	G.Manjula	203919489046	BtZC	VI
17	G.Pranathi	203919489047	BtZC	VI
18	G.Shireesha	203919489052	BtZC	VI
19	Ch.Swetha	203919489035	BtZC	VI
20	P.Ganesh	203919572096	BtBC	VI
21	P.Jithendhar	203919572081	BtBC	VI
22	K.Kartheek	203919572059	BtBC	VI



Students visit to open day on 24/03/2022 to Osmania University Departments.



Students in University bus during transport from Tarnaka to University departments

Bioactive Peptides To Target Hypertension And Prevention Of SARS-CoV-2

Abstract
The study involves generation of peptides using a cysteine protease from *Bacillus subtilis*. The protease was utilized for generating bioactive peptides using anchovy fish as a substrate. The peptides were identified by LC-MS/MS. Three of the peptides in the mixture showed ACE2 inhibitory activity, TMPRSS2 inhibitory activity and showed strong binding with Spike2 protein in the receptor binding domain (RBD) forming a glycoprotein-subunit complex. Considering the multiple binding sites, these peptides can have a potential role in averting entry of SARS-CoV-2 virus. This could in essence result by prevention of binding of Spike2 glycoprotein to the ACE2 receptor on host cells and also inhibiting TMPRSS2 mediated cleavage of virus entry.

Introduction

- Bacillus species proteases are the most widely exploited as industrial enzymes.
- Schizothorax nankaiensis* (anchovy fish) are good source of biologically active peptides.
- They were used for the first time to generate bioactive peptides using *B. subtilis* Cysteine protease.
- Peptides were analysed through Mass spectrometry.
- Used to predict binding to SARS-CoV-2 viral proteins by in-silico studies.

Outline Of the Study

Results and Discussion

Fig.1: Soil bacterial isolate screened and identified as *Bacillus subtilis* (A4). A4 isolate showed good protease activity.

Fig.2: Docking scores of peptides with ACE2, TMPRSS2 and Spike glycoprotein. Among the 3, peptide 10 and 13 showed good docking scores.

Peptide Name	Peptide sequence	ACE2 Fit score (Docking score)	TMPRSS2 Fit score (Docking score)	Spike protein Fit score (Docking score)
Peptide 10	PPANLLESSSE	74.99	95.11	66.86
Peptide 13	APPVNCHEPDR	46.71	48.87	62.66
Peptide 1	QNRALDK	25.51	26.68	35.99
Peptide 2	MGNQYAR	24.31	25.35	26.66
Peptide 3	SYQPPQGR	18.72	21.91	26.89
Peptide 4	LVPQGGSLG	28.2	22.68	31.43
Peptide 5	WADQDETEK	16.26	20.91	22.54

Protease applications

Fig.3: Blood stain removal after treating with Protease Enzyme.

Fig.4: Stain removal performance of protease from *Bacillus Subtilis* in combination with detergent.

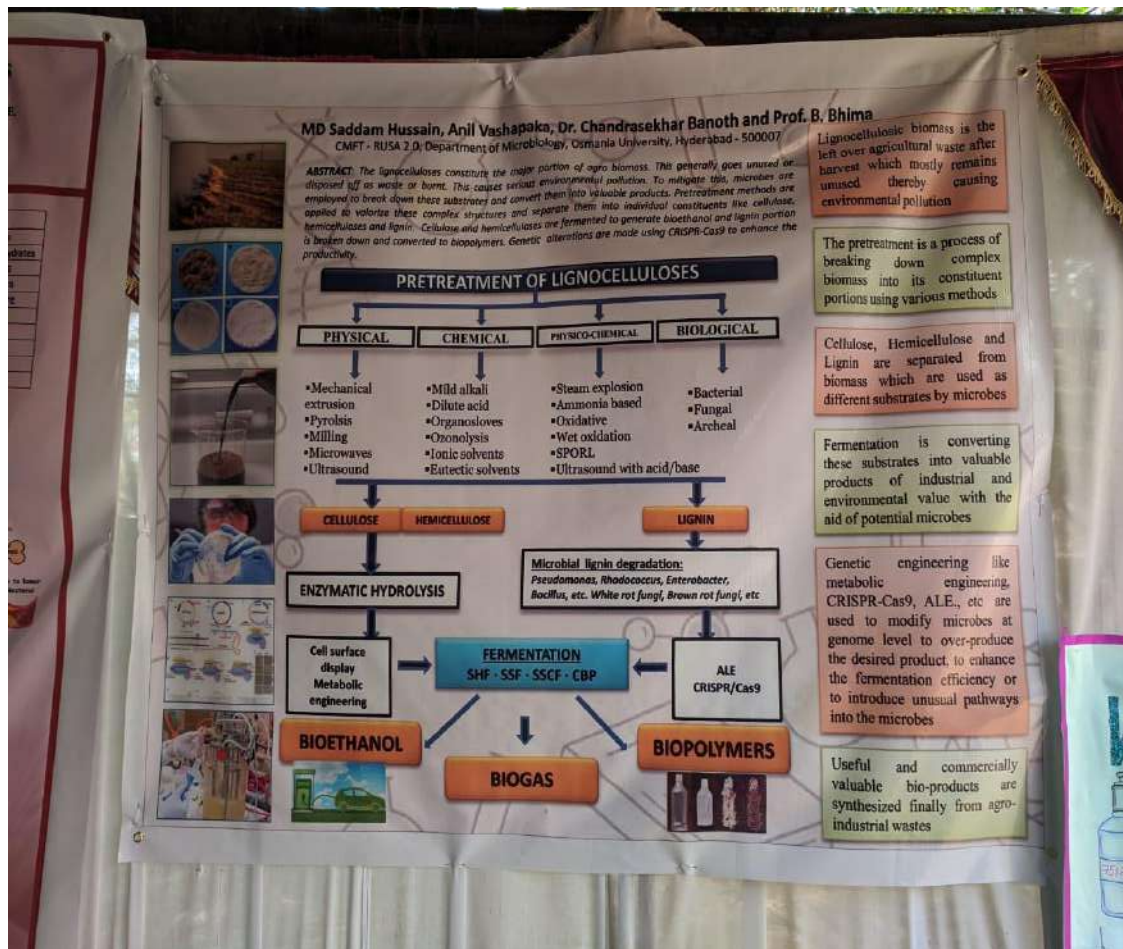
Conclusions:

- A Viable protease was isolated from *Bacillus subtilis* isolated from local soil sample.
- The protease was used to generate peptides using anchovy fish meat as a substrate.
- Three peptides from the protease treated lysate showed high docking scores to ACE2, TMPRSS2 and Spike protein Receptor binding domain (RBD).
- Binding of peptides to ACE2 can be helpful in target hypertension.
- These peptides can also have a potential role in averting entry of SARS-CoV-2 virus in multiple ways.
- The purified cysteine protease also showed enhanced stain removal when tested on fabric along with detergent. It may hence have some applications in detergent industry.

Author's Bio:
Dr. Sandhya Banerji (Associate professor & C-Head)

Exhibit posters at Department of Microbiology on open day Exhibition on 24/03/2022

Exhibit posters at Department of Microbiology on open day Exhibition on 24/03/2022



Students in Microbiology department learning Lyophilization of Microbial cultures live demonstration of Lyophilization at Lyophilizer unit, Department of Microbiology, Osmania university.



Students team from GDC, Kukatpally Microbiology department participated in Biology Quiz organized by Genetics department and got First place in Quiz.