

**PG AND RESEARCH DEPARTMENT OF BOTANY  
HOLY CROSS COLLEGE (AUTONOMOUS), TRICHY-2  
WEBINAR DETAILS**

**REPORT:**

A One-day Webinar on “*In vitro* Production of Secondary Metabolites” was organized by the PG and Research Department of Botany, Holy Cross College, Trichy on 16<sup>th</sup> June 2020. The overall goal of the webinar is to inculcate and improve the importance of recent techniques in the field of botany among the staff, research scholars and students of Life sciences.

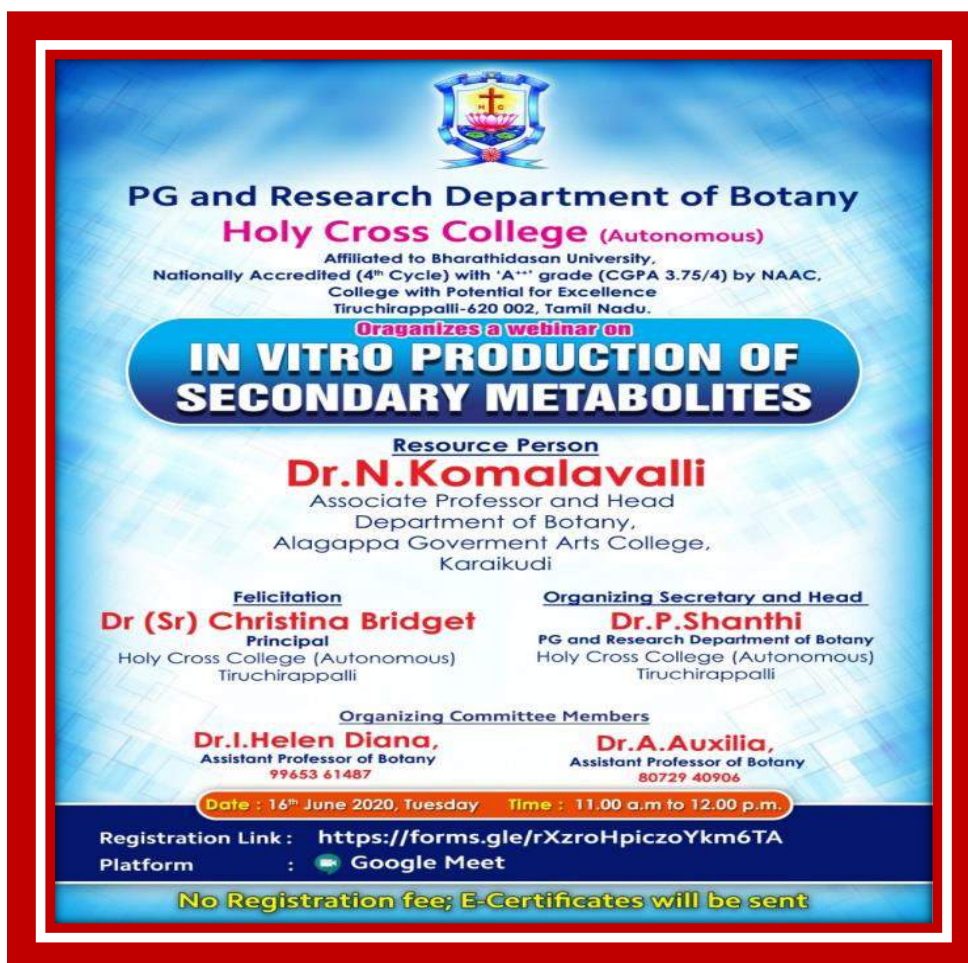
The objectives of this Webinar are: To highlight the production of secondary metabolites through *in vitro* culture and to explore the importance of secondary metabolites in the field of medicine.


The webinar was started on 16<sup>th</sup> June 2020 at 11.00am with a prayer service. Dr. P. Shanthi, Organizing Secretary, Assistant Professor and Head, PG and Research Department of Botany gave an introductory talk and welcome address. Dr.N. Komalavalli, Associate Professor and Head, Department of Botany, Alagappa Government Arts College, Karaikudi was the Resource Person.

The Resource person outlined the conventional and non- conventional method of secondary production and clearly explained the various strategies involved for the production of secondary metabolites that includes callus culture, organogenesis, cell suspension culture, hairy root culture. She described the importance of elicitors, endophytes and nanoparticles for the production of secondary metabolites in an effective way and also explained the various biosynthetic pathways responsible for the production of secondary metabolites. She explained the metabolic engineering, gene manipulation technique, genome engineering and synthetic sgRNA.

She insisted the advantages of synthetic sg RNA and specified that CRISPR-cas9 system as simple and efficient method in the field of metabolic genome engineering and also insisted that, *in vitro* culture is a tool for the applications like hairy root culture and for the commercial production of secondary metabolites. The session came to an end at 12.45 pm with the vote of thanks.

About 100 participants from our college and from various institutions participated in the webinar. Most of the participants clarified their doubts at the end of the session and they actively posted their queries in the chat box. Most of the participants satisfied with the effectiveness of the presentations and appreciated the organizing team via chat box. Feedback from the participants clearly states, that the webinar was helpful for them to gain new knowledge and awareness on secondary metabolite production through *in vitro* techniques.





**PG and Research Department of Botany**  
**Holy Cross College (Autonomous)**  
Affiliated to Bharathidasan University,  
Nationally Accredited (4<sup>th</sup> Cycle) with 'A<sup>++</sup>' grade (CGPA 3.75/4) by NAAC,  
College with Potential for Excellence  
Tiruchirappalli-620 002, Tamil Nadu.

**Organizes a webinar on**  
**IN VITRO PRODUCTION OF  
SECONDARY METABOLITES**

**Resource Person**  
**Dr.N.Komalavalli**  
Associate Professor and Head  
Department of Botany,  
Alagappa Government Arts College,  
Karaikudi


**Felicitation**  
**Dr (Sr) Christina Bridget**  
Principal  
Holy Cross College (Autonomous)  
Tiruchirappalli

**Organizing Secretary and Head**  
**Dr.P.Shanthi**  
PG and Research Department of Botany  
Holy Cross College (Autonomous)  
Tiruchirappalli

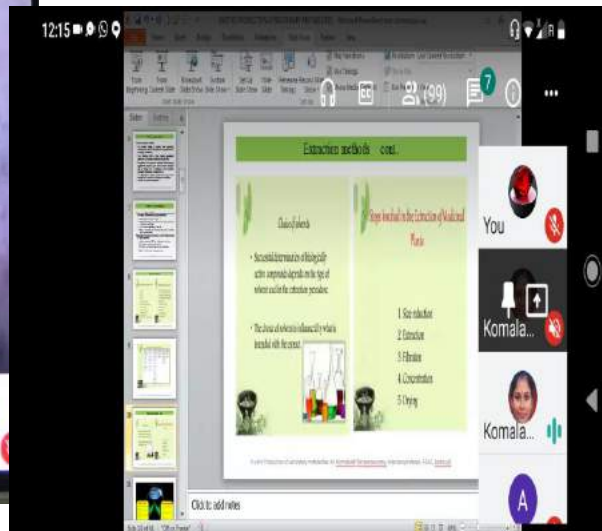
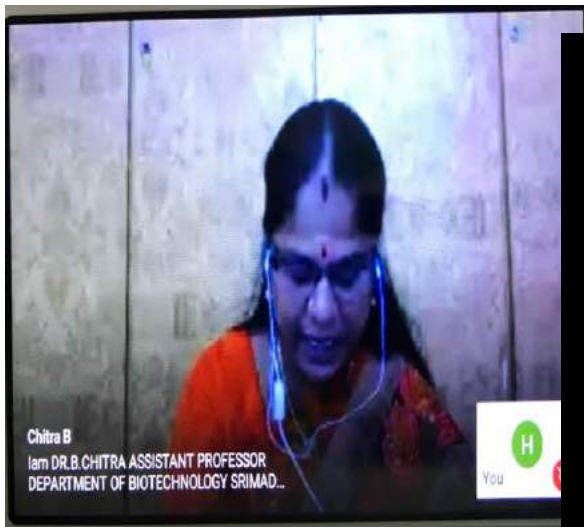
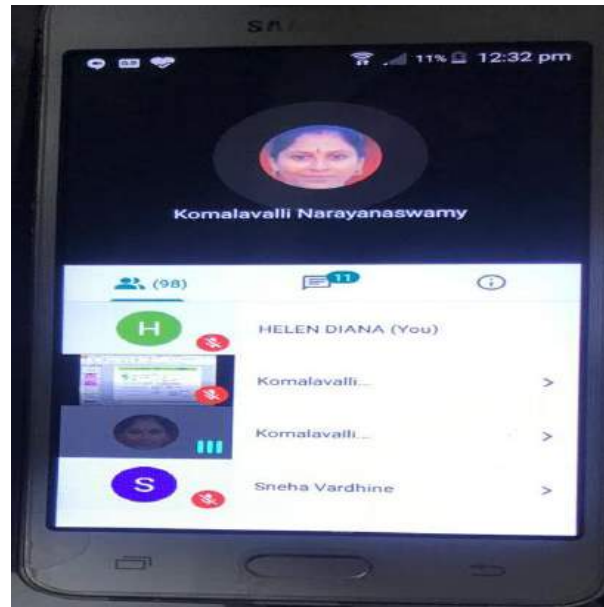
**Organizing Committee Members**  
**Dr.I.Helen Diana,**  
Assistant Professor of Botany  
99653 61487

**Dr.A.Auxilia,**  
Assistant Professor of Botany  
80729 40906

**Date : 16<sup>th</sup> June 2020, Tuesday Time : 11.00 a.m to 12.00 p.m.**

Registration Link : <https://forms.gle/rXzroHpiczoYkm6TA>  
Platform :  Google Meet

**No Registration fee; E-Certificates will be sent**



12:15

**Integration of secondary metabolites**

**Natural / wild**

**Current approaches**

Click to add notes

12:28

**Mechanism of elicitation in plant cell**

Steps involved in elicitation:

- Abiotic/biotic elicitors: Phytoalexins
- Perception of elicitors by cell membrane receptors
- Messenger  $Ca^{2+}$  factors affecting cell membrane integrity, inhibition: activation of intracellular pathways and changes in osmotic stress etc.
- Binding of the elicitor to a specific plasma membrane receptor
- Rapid changes in protein phosphorylation patterns and protein kinase activation
- Initiate the primary stimulus to cell by signal transduction pathways
- Mitogen-activated protein kinase (MAPK) activation and G-protein activation
- Acidification of cytoplasm by  $H^{+}$ -ATPase activation
- Decrease in membrane potential and extracellular increase of pH.

Click to add notes

12:28

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Click to add notes

12:53

**Genome Engineering by Programmable Nucleases**

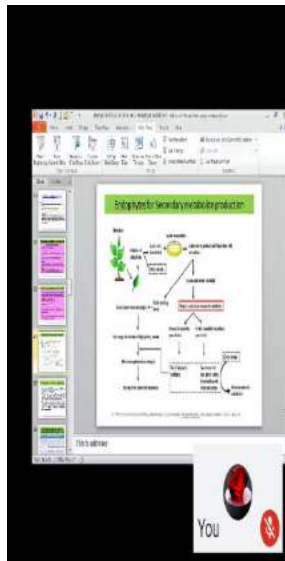
CRISPR/Cas9 Targeted DNA

Gene disruption by HDR

Gene correction by HDR

Transgene insertion by HDR

Click to add notes



(98)

Samimalai Bot 6 mins  
SAMIMALAIMURUGAN K, Research Scholar in Botany, Government Arts College for men Krishnagiri, email :[samimalaiobot@gmail.com](mailto:samimalaiobot@gmail.com)

SUBASHINI J 5 mins  
Will the secondary metabolite that is produced by in vitro method are as same as the metabolite that is present in the explant that we used? Or will it show changes as we grow it in controlled environment ?

Send a message to everyone here



(97)

Dr. N. Nirmal Kumar Assistant Profes... 7 mins  
Dr.N.Nirmal Kumar PhD SLET ICAR JRF NET Assistant professor of Botany VHNSN College autonomous Virudhunagar [rapdnimal@yahoo.co.in](mailto:rapdnimal@yahoo.co.in)...Session is very informative. Thank you to organizers

Samimalai Bot 6 mins  
SAMIMALAIMURUGAN K, Research Scholar in Botany, Government Arts College for men Krishnagiri, email :[samimalaiobot@gmail.com](mailto:samimalaiobot@gmail.com)

Send a message to everyone here

## WEBINAR DETAILS

**Name of the Activity:** Webinar

**Activities Start Date:** 16.06.2020

**No. of Resource Persons:** One

### **Report Description of the Webinar:**

**Title:** “*In vitro* Production of Secondary Metabolites”

**Date:** 16.06.2020

**Time:** 11.00am – 12.00pm

**Platform:** Google Meet

**Organizer:** Dr. P. Shanthi

**Beneficiaries:** Faculty, Researchers and Students

**Resource Person Details:** Dr. N. Komalavalli,  
Associate Professor and Head,  
Department of Botany,  
Algappa Government Arts College,  
Karaikudi.

**Activities End Date:** 16.06.2020

**No. of Participants of the Webinar:** 100

**Report Name:** Webinar on “*In vitro* Production of Secondary Metabolites”