

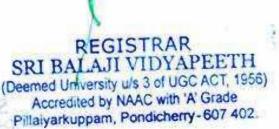
## SRI BALAJI VIDYAPEETH (SBV)

(Deemed to be University) U/S 3 of UGC Act 1956 Puducherry-607402

# This document contains the details of the

# Certificate Course in Natural Product Extraction and HPLC,

conducted by Centre for Interdisciplinary Research Facility (CIDRF), Sri Balaji Vidyapeeth, Deemed to be University.



(This document is attested from pages 1-9)

**NAAC 2020** 



# SRI BALAJI VIDYAPEETH (SBV)

(Deemed to be University) U/S 3 of UGC Act 1956 Puducherry-607402

# Criteria 1

**Metrix 1.3: Curriculum Enrichment** 

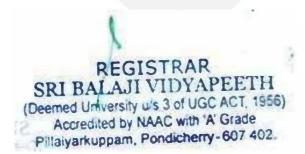
1.3.2

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## Details of Certificate Course in Natural Product Extraction and HPLC

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**NAAC 2020** 



#### SRI BALAJI VIDYAPEETH, PUDUCHERRY



#### CERTIFICATE COURSE

#### ON NATURAL PRODUCT EXTRACTION AND HPLC ANALYSIS 13th.

#### **COURSE CONTENT:**

#### **Natural Product Extraction:**

- Extraction methods for Natural products
- Value of natural products on therapeutic usage
- Extraction techniques

#### HPLC:

- Introduction to chromatography
- Principles of liquid chromatography
- Basics of HPLC
- HPLC components and their functions
- Applications of HPLC
- HPLC columns
- Separation modes
- Sample preparation
- Method development
- Sample analysis
- Quantification
- Method validation & recovery studies







A Constituent Unit of Sri Balaji Vidyapeeth (SBV)

Deemed to be University,

Puducherry

CERTIFICATE COURSE IN
NATURAL PRODUCT EXTRACTION AND HPLC ANALYSIS

This is to certify that

Mr. Mrs. Mrs. Mr. DAISY PRECILLAS

has successfully completed / assisted the

# CERTIFICATE COURSE IN NATURAL PRODUCT EXTRACTION AND HPLC ANALYSIS

with. TWO credits, conducted by the Central Inter-Disciplinary Research Facility (CIDRF),

Sri Balaji Vidyapeeth, Deemed-to-be University, Puducherry,

from ... 13th December to ... 15th December

Dr. Mangaiyarkarasi N.
Course Co-ordinator

Dr. Anitha T.S

Dr. Balanenru Subramanian Director, CIDRF, SBV



#### Certificate course in Basic Mammalian Cell Culture for Bio-Medical Research Assessment questionnaire (Batch: January 2020) Course Code: 1901609001



Nam	e or	UID of the student:	Pro Tost	Post-Test
1)	Cult	ure media is added to cells	PIG-1631	PO31-1621
',	a)	To support growth and propagation of cells.		
	b)	To support contamination with microbes		
	c)	As a coloring agent for visualization		
	d)	All of the above	-	
	e)	Don't understand the question		
2)	Whi	ch microscopic technique is "routinely" used for monitoring cell growth?		
	<b>a</b> )	Electron microscopy		
	b)	Phase Contrast Microscopy		
	c)	Fluorescent microscopy		
	d)	Stereomicroscopy		
	e)	Don't understand the question	Pre-Test	
3)	-	opreservant is used while freezing cells		
	a)	To maintain stability of cells that are frozen		
	p)	To prevent cell damage while freeze-thawing cycle		
	c)	To prevent drying of cells due to low temperature  All of the above		
	e)	Don't understand the question		
4)		saging' in cell culture is		
	a)	Splitting of cells between flasks		1
	b)	Addition of media into flasks		
	c)	Providing PBS wash to culture flasks		
	d) e)	Incubating cells with passage of time  Don't understand the question	İ	
<b>5</b> \	186.			
5)		ch reagent is used during passaging?		
	a)	Trypsin-EDTA Trypsin-HCI		
	p)	Trypsin-HCI Trypsin-activated charcol		
	c)	Trypsin-Ringer solution	1	
	e)	Don't understand the question		
6)	Wha	at % of confluency is generally considered for passaging?		
-,	a)	Less than 50%		
	b)	50-60%		
	c)	60-70%		
	d)	Above 70%		
	e)	Don't understand the question		
7)	Whi	ch of these is TRUE?		
	A no	ormal adult human cell DOES NOT have		
		Anchorage dependence		
	b)	Immortality		
	c)	Growth factor dependence		
	d)	Specialized function		
	e)	Don't understand the question		
8)	Con	fluency refers to the percentage of		
	a)	Flask with culture medium		
	b)	Viable cells in the culture flask.		
	c)	Culture area occupied by the cells in a flask		
	d)	Area below the line of a growth curve		
	e)	Don't understand the question		
9)	Whi	ch of the following is not a component of the 'basal media' in mammalian cell culture		
- 1	a)	Fetal bovine serum		ļ
	b)	Amino acids		
	C)	Vitamins		
	d)	None of the above		L
	e)	Don't understand the question		
10)		tamination that cannot be visualized in a standard inverted microscope is		-
	2)	Bacteria		l
	b)	Fungi		
	C)	Virus		l
	d)	Yeast Popil understand the greation		L
	e)	Don't understand the question		



11)	Ideally in cell culture, antibiotics should		
	a) Always be used		
	b) Never be used	==	
	c) Used during contamination		}
	d) Used during weekends		
	e) Don't understand the question		
42)	NAGE on Many sings and a superior of a winner of the control of		
12)	When thawing cryopreserved animal cells you should  a) Thaw slowly at 4°C		
	b) Thaw rapidly at 100°C		1
	c) Thew rapidly at 37°C		
	d) Not worry about temperature		
	e) Don't understand the question		
	cy both discolating the doctrost		
13)	When cryofreezing, it is best to have cells that are of		
•	a) Low passage number & low viability		
	b) Low passage number & high viability		
	c) High passage number & low viability	l	1
	d) High passage number & high viability		
	e) Don't understand the question		
14)	CO <sub>2</sub> used in an incubator to culture mammalian cells is		1
	a) To maintain the pH of the medium		
	b) To slow down the cell growth		
	c) To improve solubility of nutrients		
	d) To prevent contamination		
	e) Don't understand the question		
15)	The phenomenon where normal cells stop proliferating once they come in contact with each other		
,0,	is		
	a) Contact supposition		
	b) Contact antagonism		
	c) Contact concession		
	d) Contact inhibition		
	e) Don't understand the question		
16)	Which of the following is NOT the major function of the serum in cell culture?		
	a) Stimulate cell growth		
	b) Enhance cell separation		
	c) Promotion of cell detachment	]	
	d) Provide protein supplementation		
	e) Don't understand the question		
17)	Plotting a semi-logarithmic graph of the rate of cell proliferation over time produces a		
,	a) Log Phase		i
	b) Contact Inhibition	-	
	c) Cell Viability		
	d) Growth Curve	ļ	
	e) Did not understand the question		
	And the Manager of the Control of th		
18)	Animal cell culture normally employs of CO <sub>2</sub> for growth		
	a) 1% b) 5%		ļ
			İ
	d) 50% e) Did not understand the question		ļ
	C) Did not an activate the quadron		
19)	"Hayflick's Limit" is the limit of cell divisions beyond which cells		
	a) start to age		
	b) become cancerous		10
	c) become domant		
	d) start to die		
	e) Did not understand the question	1	
201	Tayona Blue is used to see on the		
∠U)	Trypan Blue is used to assess the of cells in cell culture		
	a) Sensitivity b) Immortality		
	b) immortality c) Viability	1	
	d) Specificity	1	
	e) Did not understand the question	Į.	
	e, me the management of a decement	<u> </u>	

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### SRI BALAJI VIDYAPEETH, PUDUCHERRY



#### **CERTIFICATE COURSE**

## ON NATURAL PRODUCT EXTRACTION AND HPLC ANALYSIS 13th,

14 th & 15th December 2019

#### PRE-TEST

- 1. HPLC stands for
  - a. High Pressure Liquid Chromatography
  - b. High Performance Liquid Chrosmatography

(Ans: b)

- c. Both (a) and (b)
- d. High Placed Liquid Chromatography
- 2. HPLC methods include
  - a. Liquid/liquid (Partition) Chromatography
  - b. Liquid/solid (Adsorption) Chromatography

(Ans: d)

- c. Ion exchange and size exclusion chromatography
- d. All of the above
- 3. The eluent strength is the measure of
  - a. Solvent adsorption energy
  - b. Solvent absorption energy

(Ans: a)

- c. Solvent diffusivity
- d. Solvent mixing index
- 4. In reverse phase HPLC, there is a
  - a. Non polar solvent/polar column
  - b. Polar solvent/ non polar column

(Ans: b)

- c. Non polar solvent/non polar column
- d. Any of the above
- 5. Which of the following(s) is/are the advantage of HPLC over traditional LPLC (Low Pressure Liquid Chromatography)?
  - a. Great sensitivity and reusable columns

b. Ideal for ionic species and large molecules

(Ans: d) = a

- c. Sample recovery
- d. All of the above
- 6. What is 'simplification' when referred to in drug development terms?
  - a. Process by which a drug candidate is synthesised as simply as possible
  - b. Process of adding more chiral centres to a compound to make it bind more easily to its biological target (Ans: d)
  - c. Process of removing unimportant groups from a lead compound in the hope of maintaining activity but rendering the resulting compounds cheaper and easier to make
  - d. Process of shortening the drug development process from the discovery stage to its clinical trials stage
- 7. Solvent extraction is more effective when the extraction is repeated with
  - a. Extra solvent
  - b. Large solvent

(Ans: c)

- c. Small solvent
- d. No solvent
- 8. A mobile phase cannot be a:
  - a) Gas
  - b) Solid

(Ans: b)

- c) Liquid
- d) Solid or gas
- 9. What is meant by the optimum temperature of a reaction?
  - a. The temperature that results in the maximum possible yield.
  - b. The temperature that results in the minimum amount of impurities (Ans: c)
  - c. The temperature that results in an acceptably high level of yield and an acceptably low level of impurities.
  - d. None of the above
- 10. Which of the following solvents is unacceptable on large scale?
  - a. Heptane

c. Xylene

b. Diethyl ether

d. Dimethoxyethane

(Ans: c)

SRI BALAJI VID VAPEETH
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Accredited by N. AC with 'A' Grade
Pillaiyarkuppa.n, Pondicherry-607 402.



# SRI BALAJI VIDYAPEETH, PUDUCHERRY

## **CERTIFICATE COURSE**



# NATURAL PRODUCT EXTRACTION AND HPLC ANALYSIS

13th, 14th & 15th December 2019



### **Enrolled student list**

S. No	Name& Designation	Day 1		Day 2		Day 3	
		FN	AN	FN	AN	FN	AN
1.	Dr.S. Kavita	Sut	Soil	sult	lit	Sitted	fite
2.	Dr. R. Vasisha. I. PGi - MDS.	Vairled	Josephar	Jaskat.	Valstor	Vauste A	Joulal
3.	Ms. Daisy Precilla & PhD scholar, CIDRF, SBV	2 going	& Rosey	Date:	2 Riery	c & giery	D. Boral
4.	Pho scholar CI DRF, SBV	Zdni	o Cari	2di	J. Avi	J. S.	gal-
5.	ROSEMOND TRESA A	RY	RS	RY	Rt	D	AT

Central Inter-Disciplinary Research Facility
Tauma Seed Barker College & Research Inspect Cont.
August Seed. Pools Contrainers Volo Road
Puducherry-601 402

REGISTRAR
SRI BALAJI VIDYAPEETH
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