

# ASSIGNMENT - 1

25.07.2023

TUESDAY

1. Define central tendency. How it is calculated. Write about mean, median and mode. Write the application for the same.

A: Measure of central tendency or an average refers to the value, which is used to represent an entire series. This property of concentration of the value around a central value is known as central tendency. The central value around which there is a concentration is called the measure of central tendency.

## 1. Mean

There are three types of means such as Arithmetic mean, Geometric mean and Harmonic mean.

### (i) Arithmetic Mean:

Arithmetic mean of a set of observations is defined as the sum of all observations divided by the total number of observations and it is denoted by  $\bar{x}$ .

Arithmetic mean is simple term called as 'average value'.

Formula for ungrouped data :

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n} = \frac{1}{n} \sum x_i$$

Average, then the correlation said to be positive.  
eg: Height and weight.

If the value of one variable increases, then the value of other variable decreases on an average or in a simple manner, if the value of both variable moves in opposite direction, then it is

Q.2

1. Write Biochemical Tests:

→ Living microorganisms are differentiated on basis of various enzyme catalysts metabolic reactions. Presence or absence of certain enzymes, ~~the~~ intermediary metabolites of end products often given valuable information in identifying and classifying of microorganisms.

(i) Sugar fermentation:

→ The ability of microorganism to ferment various sugars is tested by inoculation of the test microorganisms in different sugar media containing indicators. Acid production is shown by change in the colour of medium to pink or red and the gas, if produced, gets collected in Durham's tube.

(ii) Litmus milk reactions:

→ The major substrates capable of transformation are milk sugar lactose and the milk protein casein, lactoalbumin and lactoglobulin, litmus milk forms an excellent differential media which microorganism can metabolize milk sub depending on their enzymes complement such as lactose fermentation, gas production,

### vii) Nitrate reduction test:

→ This test detects the production of enzyme nitrate reductase which reduces nitrate to nitrite. Inoculate test microorganisms in 5ml medium containing Potassium nitrate, peptone and distilled water. Incubate it in  $37^{\circ}\text{C}$  for 96 hours. Then add 0.1 ml test reagent which consists of equal volumes of sulphuric acid and  $\alpha$ -naphthylamine in 5N acetic acid mixed just before use. A red colour developing within a few minutes indicates the presence of Nitrite.

### viii) Hydrogen sulphide production.

→ Some microorganism produce hydrogen sulphide from sulphur containing amino acids. It may be detected by suspending strips of filter paper impregnated with lead acetate between the cotton plug and the tube. It has variable sensitivity. When cultured in media containing lead acetate or ferric ammonium citrate or ferrous acetate they turn them black or brown.



**ABSTRACT:**

The work aimed to look into the supportive mucoadhesive aspects of neem (*Azadirachta indica*) fruit mucilage by incorporating it into mucoadhesive microspheres by taking Acyclovir (ACR) as a model drug. Nine interpretations of mucoadhesive microspheres were made with Methocel 934P along with various proportions of Neem fruit mucilage. A central composite design with the help of design expert software to check the impact of independent variables (neem mucilage and methocel 934 P levels) on ACR release at 3h, 6h, and 10h as a response. The formulated microspheres were found to have good entrapment efficacy, mucoadhesion, drug contents, and other constraints assessed. Neem fruit mucilage is capable of enhancing the mucoadhesion in combination with methocel 934 P and ACR can be retained in the stomach with its sustained release as mucoadhesive microspheres.

**KEYWORDS:** Acyclovir, Factors, Microspheres, Mucoadhesive, Neem.

**INTRODUCTION:**

Acyclovir (ACR) is a purine nucleoside analogue with oral bioavailability appraised to 15-30% and a half-life of 2 hrs. To increase the gastric availability of the drug the gastro retentive microspheres, was prepared which are of special importance among the various dosage forms. Neem (*Azadirachta indica*) fruit mucilage (NFM) was used in developing the mucoadhesive microspheres using design expert software.

**Materials and methods:**

Acyclovir (ACR) was obtained from Actavis Pharma, Bangalore, Methocel 934P and dichloromethane were from Merck, Hyderabad. Followed by Extraction of mucilage, Cleaning of the mucilage, Experimental design

**Evaluation Parameters**

- DSC studies,
- FT-IR,
- % yield,
- Entrapment efficiency,
- Swelling measurement followed by Mucoadhesion measurement study
- Statistical optimization & *In Vitro* ACR release study.

**Results and Discussion:**



Fig.1: Central plot and 3D response plots for DR at 3h, 6h, and 10h



Fig.2: Optical microscopy of the drug loaded B-6 batch with large particle size.

RESULTS FOR IN VITRO RELEASE (MEAN ± SD)			
Batch	3h	6h	10h
B-1	10.00	15.00	20.00
B-2	12.00	18.00	25.00
B-3	15.00	22.00	30.00
B-4	18.00	28.00	35.00
B-5	20.00	30.00	38.00
B-6	22.00	32.00	40.00
B-7	25.00	35.00	42.00
B-8	28.00	38.00	45.00
B-9	30.00	40.00	48.00
B-10	32.00	42.00	50.00
B-11	35.00	45.00	52.00
B-12	38.00	48.00	55.00
B-13	40.00	50.00	58.00
B-14	42.00	52.00	60.00
B-15	45.00	55.00	62.00
B-16	48.00	58.00	65.00
B-17	50.00	60.00	68.00
B-18	52.00	62.00	70.00
B-19	55.00	65.00	72.00
B-20	58.00	68.00	75.00
B-21	60.00	70.00	78.00
B-22	62.00	72.00	80.00
B-23	65.00	75.00	82.00
B-24	68.00	78.00	85.00
B-25	70.00	80.00	88.00
B-26	72.00	82.00	90.00
B-27	75.00	85.00	92.00
B-28	78.00	88.00	95.00
B-29	80.00	90.00	98.00
B-30	82.00	92.00	100.00

Table 2: ANOVA for the response



Fig. 3: In vitro mucoadhesion of AMDM

Fig. 4: In vitro drug release from ACV.

Table 1: Composition of the NFM

Component	Formulations									
	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10
Acyclovir (mg)	200	200	200	200	200	200	200	200	200	200
Ethyl Cellulose (mg)	50	50	50	50	50	50	50	50	50	50
NFM (mg)	50	50	50	75	75	75	100	100	100	100
Methocel 934P (mg)	50	75	100	50	75	100	50	75	100	100
Dichloromethane (ml)	25	25	25	25	25	25	25	25	25	25
Span 80 (ml)	2	2	2	2	2	2	2	2	2	2
Carboxylstyrb (ml)	2	2	2	2	2	2	2	2	2	2
Liquid paraffin (ml)	100	100	100	100	100	100	100	100	100	100

**Conclusion:**

Acyclovir formulation included Neem fruit mucilage combined with Methocel 934 P for the release in the mucoadhesive drug delivery system. The quantities of NFM are less in formulations B-1 to B-3, indicating good entrapment of ACR. It can be concluded from this study that mucoadhesive microspheres of ACR with NFM aided by methocel 934 P meet the ideal requirement for mucoadhesive microspheres, which can enhance retention and availability in the stomach for efficient and intended drug delivery.

**References:**

1. Patel D, Sawant KK. Oral bioavailability enhancement of acyclovir by self-microemulsifying drug delivery systems (SMEDDS). Drug Dev Ind Pharm. 2009;35(12):1318-26.
2. Wang M, Hou J, Yu DG, Li S, Zhu J, Chen Z. Electrospun in-layer nanodisks for sustained release of acyclovir. J Alloy Compd. 2020;846:158471.
3. Shrivastava Y, Akhatar HA, Hananath C, Gan Poosjitha B, Raghunathulu S, Rupaiah A. Post Decade Work Done On Carboxen Using Factorial Design: A Fast Track Information for Researchers Int J Life Sci Pharma Res. 2021;11:124-35.



# EVALUATION OF *IN-VITRO* ANTI-OXIDANT AND ANTI-INFLAMMATORY ACTIVITIES OF *COIX LACRYMA-JOBI*



PP-01

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**ABSTRACT:** The present investigation was mainly centered to evaluate the *in-vitro* antioxidant and anti-inflammatory activity of medicinal plant, *Coix lacryma-jobi* using Hydrogen peroxide scavenging assay, DPPH free radical scavenging assay, Erythrocyte suspension method, Protein denaturation method. The observation from the assay demonstrated dose dependent increase in anti-Oxidant and anti-inflammatory activity. The exhibited anti-oxidant and anti-inflammatory effect of the extract in various models may be attributed due to the presence of poly phenols and phenolic compounds.

**KEYWORDS:** Anti-oxidant, free radical, anti-inflammatory, *Coix lacryma-Jobi*

**INTRODUCTION:** Antioxidants are the substance that protect the cells from the damage caused by the free radicals. Free radicals may play a part in cancer, heart diseases, stroke and other diseases of aging. Anti-inflammatory is the property of a substance or treatment, that reduces inflammation or swelling, by inhibiting the COX enzyme.

*Coix lacryma-jobi* is a herb which is used to evaluate the antioxidant and anti-inflammatory activity. *Coix lacryma-jobi* commonly known as job's tear's, belongs to the family Poaceae.

## Materials and methods:

### *In-vitro* Anti-oxidant study:

- 1) DPPH free radical scavenging assay
- 2) Hydrogen peroxide Scavenging assay

### *In-vitro* anti-inflammatory study

- 1) Erythrocyte suspension method
- 2) Protein denaturation method

Compounds	Aqueous	Ethanol	Hydroalcoholic
Alkaloids	-	+	+
Phenols	+	++	+++
Flavonoids	+	+++	+++
Saponins	-	+	+
Steroids	-	+	+
Tannins	+	+++	+++
Carbohydrates	+	+	+
Proteins	-	+	-
Amino acids	-	+	-
Glycosides	-	+	+

(+++)= More intensely present, (++)= Intensely present, (+)= Present, (-)= Absent

Table 1: Physico-chemicals present in water, ethanol, hydroalcoholic solvent

## References:

1. Calapai G. European legislation on herbal Medicine: A look into the future. Drug Saf 2008;31(5):428-431.
2. Pal SK, Herbal medicine: current status and the future. Asian pacific journal of cancer prevention. 2003 Aug 20;4(4):281-8.

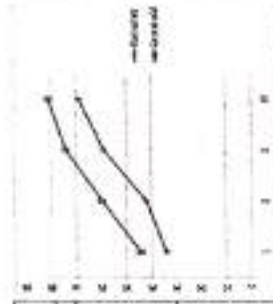
## Results and Discussion:

### DPPH ASSAY

Sample	Concentration (µg/ml)	Absorbance (490nm)	% Inhibition	IC50
Control	0	0.837	0	2170
	20	0.691	16.84	
	40	0.545	33.68	
	60	0.399	50.52	
	80	0.253	67.36	
Aspirin	0	0.837	0	1010
	20	0.691	16.84	
	40	0.545	33.68	
	60	0.399	50.52	
	80	0.253	67.36	

Values are mean ± SD, n=3, \*p<0.05 vs control

Table 2: *In-vitro* determination of antioxidant activity by DPPH Assay

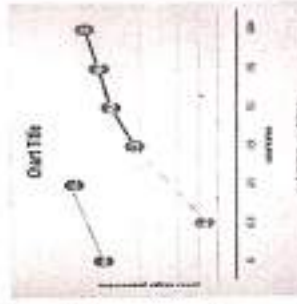


### ERYTHROCYTE SUSPENSION METHOD

Sample	Concentration (µg/ml)	Haemolysis (%)	IC50
Control	0	0.74	10.10
	20	0.594	
	40	0.448	
	60	0.302	
	80	0.156	
Aspirin	0	0.74	10.10
	20	0.594	
	40	0.448	
	60	0.302	
	80	0.156	

Values are mean ± SD, n=3, \*p<0.05 vs control

Table 3: *In-vitro* anti-inflammatory activity of plant extract by Erythrocyte suspension method



## Conclusion:

The present study concludes that the *in-vitro* anti-oxidant and anti-inflammatory activity of *Coix lacryma-Jobi* found that the anti-oxidant and anti-inflammatory activities are dose dependent in an incremental order.



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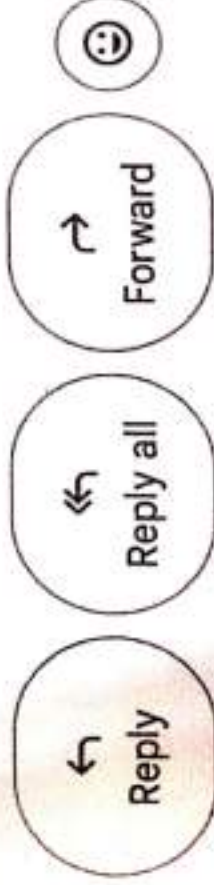
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I'd- 19PD022

Class - 4th year pharm D

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In Cricket during sports event 2022-23.

certificate



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GRADUATE PHARMACY  
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NTA SCORE CARD



राष्ट्रीय परीक्षा एजेंसी  
National Testing Agency

Application No.	230210039933	Roll No.	KK04020047	
Candidate's Name	AKASH NAYAKA M			
Mother's Name	M RENUKA			
Father's Name	P MAHESH			
Category	ST	Person with Benchmark Disability(PwBD)	No	
Gender	Male	Date Of Birth	30/09/2001	
State of Residence	KARNATAKA	Nationality	Indian	



#3DCA18E4020047KK04020047728854

Score

Details	NTA Score (in Figures)	All India Rank	Validity of Score
	76.0997820	14911	Three Years
NTA Score in Words	Seventy Six point Zero Nine Nine Seven Eight Two Zero Only		
Result	QUALIFIED		
Category wise Cut-off (NTA Score)			
	Unreserved (UR)	GEN-EWS	Other Backward Class (OBC-NCL)
Unreserved (UR)	96.1812235	90.1695242	90.5716216
Scheduled Caste (SC)	77.1061859	57.7465692	Scheduled Tribe (ST)

Result Date : 01.07.2023

*(Signature)*

Director, NTA

Important Instructions

- The NTA Score of a candidate indicates the percentage of candidates who have scored EQUAL TO OR BELOW (same or lower raw marks) that candidate in that session.
- The NTA scores of a Candidate have been calculated as follows:  
**100XNumber of candidates appeared in the 'Session' with raw score EQUAL TO OR LESS than the candidate**  
Total number of the candidates appeared in the 'Session'
- NTA score is not the same as percentage of marks obtained.
- A National Merit Ranking (All India Rank) has been arrived on the basis of NTA Score.
- Candidates having same Score shall be listed in a chronological (ascending) order as per their date of birth.
- Candidates having same score would be given the same Merit, and the Merit number would be increased by the same number i.e. if there are two candidates at Merit 2, Merit 3 would not be awarded to the next candidate but Merit 4 would be given.
- The admission authorities are advised to use score awarded to the students for allotment of seat in the AICTE approved programs along with the other criteria that may exist, as applicable.
- Candidate's particulars including Category and Person with benchmark Disability (PwBD) have been indicated as mentioned by the candidate in the online application form.
- Instances of incorrect information provided by the candidates, if detected at any stage, would make the candidate liable for disqualification.





ರಾಜಿವ್ ಗಾಂಧಿ ಆರೋಗ್ಯ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕರ್ನಾಟಕ, ಬೆಂಗಳೂರು  
 RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES, KARNATAKA, BENGALURU  
 4th T Block, Jayanagar, Bengaluru - 560 041

**RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES, BANGALORE  
 UNDER GRADUATE PROJECT APPROVAL ORDER**

Sub:	Orders for approval of research grants to the UG students of affiliated institutions of RGUHS to carryout research projects for the year 2022-23reg
Ref:	1. University notification No: RES/UG-RESEARCH/98/2021-22 dated 17-03-2022 2. Approval of the 81 <sup>st</sup> Finance committee meeting held on 29-09-2022. 3. Approval of the 174 <sup>th</sup> Syndicate meeting held on 20-10-2022.
Project Code	UG22PHA468
Principal Investigator	MOHAMMAD NOUFAL
College	RR COLLEGE OF PHARMACY, BANGALORE
Name of the Guide	MRS AKILA E
Research Project Title	GC-MS and molecular docking analyses of phytochemicals from the leaf of underutilised plant, Chenopodium giganteum D. revealed candidate anti-cancerous and anti-inflammatory agents.
Research Grants Sanctioned	15000 ( Fifteen Thousand)
Duration of the Pro	Three months from the date of issue of amount through NEFT/RTGS.

One of the main objectives of the University is to promote research activities in the University affiliated colleges. In this regard University had invited applications for financial assistance for conducting the research projects by the UG students of colleges affiliated to RGUHS for the year 2022-23, wherein university received 546 research proposals. The Subject Experts as suggested by the concerned BOS UG chairpersons and the Expert Committee comprising of all the BOS UG chairpersons have scrutinized the research proposals and shortlisted them based on the criteria set out by the University. Such of the proposals which have fulfilled the norms, have been recommended by the Expert Committee for sanction of research grants.

The Syndicate in its meeting held on 20-10-2022 has approved to sanction the grant-in-aid as per the recommendations of Expert Committee for 355 selected proposals in



1. As per the Medical Termination of Pregnancy Act and rules, the safe custody of "Forms" is with :  
(a) Standing committee (b) Registered Medical Practitioner  
(c) Owner of the approved place (d) Chief Medical Officer
2. For protein detection most commonly used probe is :  
(a) Interferon (b) Antibody (c) Lactin (d) Antigen
3. Consumer who are loyal to two-three brands are considered as :  
(a) Split loyals (b) Switcher loyals (c) Semi-core loyals (d) Shifting loyals
4. Choose the CORRECT statement with respect to "The Pharmacy Act, 1948 :  
(a) Education regulation 1991 dose not prescribe the minimum qualification for the registration as Pharmacist  
(b) Section 12 of the act deals with the approval of course of study under chapter 2 there of.  
(c) Section 12 of the act deals with the approval of course of study and examination under chapter 2 there of.  
(d) State Govt. is authorised to make any rules with respect to course of study.
5. ELISA is based upon  
(a) Antigen Protein Interaction (b) Antibody - protein Interaction  
(c) Antigen Antibody Interaction (d) Lactin - Antibody Interaction
6. The relation between emissive power of the surface and its absorptivity is given by  
(a) Stefan - Boltzmann Law (b) Darcy's Law  
(c) Fourier's Law (d) Kirchoff's Law
7. In India the patent office has its head office at Kolkata and branch offices at :  
(a) Dibrugarh, Indore and Vapi (b) Kashmir, Ahmedabad and Thiruvandrum  
(c) Chandigarh, Hyderabad and Goa (d) Mumbai, Chennai and New Delhi
8. Penalty for the cultivation of any cannabis plant to produce, sell purchase transport in contravention of Narcotic Drugs and Psychotropic substances Act and Rules on first conviction is  
(a) Rigorous imprisonment up to 10 years or fine up to Rs. 10 Lakhs  
(b) Rigorous imprisonment up to 10 years or fine up to Rs. 1 Lakh  
(c) Rigorous imprisonment up to 6 months  
(d) Fine up to Rs. 10 Lakh
9. In Direct, Contact or Jet condensers, barometric leg serves one of the following functions :  
(a) To remove the condensate/cooling water mixture  
(b) To measure the pressure difference across the tube  
(c) To Heat the liquid feed to its boiling point  
(d) To transfer the feed in to the evaporating chamber
10. Which of the following is considered as differentiated product ?  
(a) Ranitidine (b) Zantac (c) Isoniazid (d) Paracetamol
11. Hardinge mill is a variant of :  
(a) Fluid energy mill (b) Ball mill (c) Hammer mill (d) Rotary cutter mill