



**B. L. D. E ASSOCIATION'S**  
**S. B ARTS AND K. C. P SCIENCE COLLEGE,**

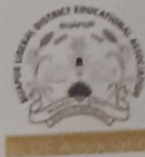
SHRI B. M. PATIL ROAD (Solapur Road), VIJAYAPUR

ACCREDITED at 'A' Grade in 3<sup>rd</sup> Cycle by NAAC

Phone: (08352) – 261766, (08352) 262770 Extn. 2223, 2224

Fax: 08352 – 261766 E-mail: [bldeasbkcp@gmail.com](mailto:bldeasbkcp@gmail.com)

Web: [www.bldeasbkcp.org](http://www.bldeasbkcp.org)



**MEMORANDUM OF UNDERSTANDING (MOU) FOR  
RESEARCH PARTNERSHIP AND COLLABORATION**

This MOU is made and executed at Vijayapur

**BETWEEN**

S.B.Arts and K.C.P Science college , Vijayapur situated at Bangaramma Sajjan campus Vijayapur.

**AND**

BLDEA SSM Pharmacy and Research centre Vijayapur, hereinafter referred as BSSMPRC, on the other part.

Whereas SBKCPSC is an institute of National importance that imparts education and carries out

Research in the fields of mathematics , physics, chemistry and Biology ;  
And whereas BSSMPRC is reputed and established contract research organ ,  
founded in 1986 by a group of experienced and motivated toxicologist ; carries  
out research in the fields of analytical chemistry , general toxicology and  
environmental toxicology; has considerable expertise in the fields of safety  
assessment research, both using in-vitro and in-vivo test systems ; has qualified  
and certified multidisciplinary team of scientists has established excellent animal  
house facilities complying with all regulatory, ethical and scientific requit; offers  
safety evaluation solutions to innovators and industrial throughout the world with  
it's global clientele; actively partners with Discovery and research groups of  
pharmaceutical , biological and chemical industries and aspires to be a center of  
excellence in product safety evaluation.

Therefore BSSMPRC and SBKCPSC recognized that mutual collaboration, given  
each other's strengths in research and facilities therefore, will mutually benefit  
the students and faculties of BSSMPRC and the scientists and clients of  
SBKCPSC.

Now therefore the parties here to have agreed to enter into a memorandum of  
understanding MOU considering the long term benefits of sharing the knowledge  
between the institutes and establish a vibrant academic collaboration, by  
undertaking joint activities in their respective fields of research as below  
(hereinafter referred to as "Activities").

It is mutually agreed by and between the parties as under .

Activities:

Activities would mean,

- 1) Seek mutual advice and support in planning and executing programs promoting excellence in respective areas and education .
  - 2) Encourage the regular / visiting faculty members and scientists of either institute to visit the other institute for giving talks in lecture / Programme.
  - 3) Encourage students/ research personnel of either institute to attend lectures, seminar , workshops and conferences in the respective areas of interest.
  - 4) Share the library and scientific literature to the scientists / students / research personnel of other institute .
  - 5) Encourage the research / graduate students BSSMPRC and scientists staff of SBKCPSC to visit the other institute for short duration for getting research inputs and guidance upon recommendation from the research guides/faculty members .
  - 6) Encourage joint research activities and projects by the faculty members/ scientific personnel of BSSMPRC and SBKCPSC.
- The agreement is valid for the period of 2018-2019.

Termination :

This agreement can be terminated by mutual content of both parties .This agreement is made on this day of 20/04/2019

PARTY-I

*[Signature]*

**Principal,**

S.B.Arts & K.C.P. Science College,

**VIJAYAPUR.**

PARTY-II

*[Signature]*

**Principal,**

BLDEA's, S.S.M. College of  
Pharmacy & Research Centre.  
VIJAYAPUR-586103.

BLDEA's  
S.B.Arts and K.C.P.Science College Vijayapur  
Dept of Chemistry

NOTICE

Date :20/04/2019

The Students of M.Sc III sem chemistry here by requested to attend project work at SSM College of Pharmacy to carry out antioxidant and anti-inflammatory activity work in H.Shivakumar Research laboratory on 24/04/2019

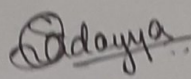
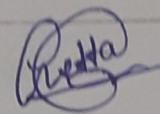
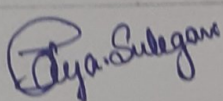
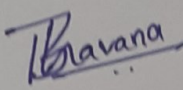
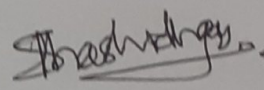
**Head**  
Dept. of Chemistry  
SB Arts & KCP Sc. College,  
Vijayapur.

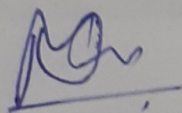
**IQAC, Co-ordinator**  
S.B.Arts & K.C.P.Science College,  
Vijayapur.

**Principal,**  
S.B.Arts & K.C.P. Science College,  
VIJAYAPUR.

**Faculty Name: M.S.Yadave**

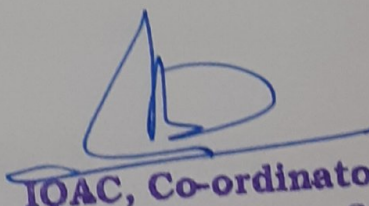
**Students List 2018-2019**

<b><u>Name of the student</u></b>	<b><u>Signature</u></b>
Sidayya.Pujari	
Geeta.Tuppad	
Sulegavi.Jayalaxmi	
Bhavana.B.Kulkarni	
Shashidhar.Mamane	



**Head**

**Dept. of Chemistry**  
**SB Arts & KCP Sc. College.**  
**Vijayapur.**



**IQAC, Co-ordinator**  
**S.B.Arts & K.C.P.Science College.**  
**Vijayapur.**

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**Principal,**  
**S.B.Arts & K.C.P. Science College,**  
**VIJAYAPUR.**



RANI CHANNAMMA UNIVERSITY, BELAGAVI



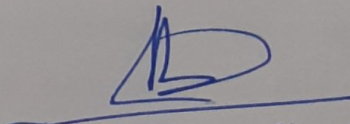
B.L.D.E. Association's  
S.B. ARTS AND K.C.P. SCIENCE COLLEGE,  
VIJAYAPUR-586103  
POST GRADUATE DEPARTMENT OF CHEMISTRY

A PROJECT ON  
"SYNTHESIS AND CHARACTERIZATION OF ZIRCONIUM NANOPARTICLES  
FROM ORANGE JUICE AND PEEL EXTRACT AND ANTIINFLAMMATORY  
ACTIVITY AND ANTIOXIDANT ACTIVITY"

Submitted in partial fulfillment of requirement for  
The award of the degree

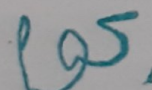
MASTER OF SCIENCE  
IN  
CHEMISTRY (GENERAL)

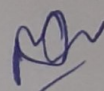
Project Supervisor  
Dr. M.S.YADAWE

  
IQAC, Co-ordinator  
S.B.Arts & K.C.P.Science College,  
Vijayapur.

Submitted By

Mr. SIDDAYYA PUJARI  
Reg No: CH172020

  
Principal,  
S.B.Arts & K.C.P. Science College,  
VIJAYAPUR.

  
Head  
Dept. of Chemistry  
SB Arts & KCP Sc. College,  
Vijayapur

## In-vitro anti-inflammatory activity of ZnNPs from citrus sinensis juice and peel extract.

The anti-inflammatory activity of new chemical compounds was studied by using inhibition of Albumin Denaturation technique which was studied according to Mizushima et al and Sakat et al<sup>1, 2</sup>. The reaction mixture (0.5 ml) consists of 0.45 ml of bovine serum albumin (5% aqueous solution) and 0.05 ml of Juice and Orange peel extracts (100, 200, 300, 400 & 500 µg/ml of final volume). pH was adjusted at 6.3 using a small amount of 1N hydrochloric acid. The samples were incubated at 37°C for 20 min and then heated at 51°C for 10 min. After cooling the sample, 2.5 ml of phosphate buffer solution was added into each test tube. Turbidity was measured spectrophotometrically at 600 nm for control tests; 0.05 ml of distilled water was used instead of extracts while product control tests lacked bovine serum albumin. The experiment was performed in triplicate.

The Percentage inhibition of protein denaturation was calculated using following formula

$$\text{Percentage inhibition} = (\text{Abs Control} - \text{Abs Sample}) \times 100 / \text{Abs control}$$

### Results :

#### Effect of new chemical compound on Protein Denaturation:

Protein denaturation is a process in which proteins lose their tertiary structure and secondary structure by application of external stress or compound, such as strong acid or base, a concentrated inorganic salt, an organic solvent or heat. Most biological proteins lose their biological function when denatured. Denaturation of proteins is a well documented use of inflammation. As part of the investigation on the mechanism of the anti-inflammatory activity, ability of new chemical compounds namely Juice and Orange peel extracts to inhibit protein denaturation was evaluated. It was effective in inhibiting heat induced albumin denaturation. The percentage inhibition of protein denaturation of Juice extract was found to be 23 – 57 and Orange peel extract was found to be 30 - 59. Maximum

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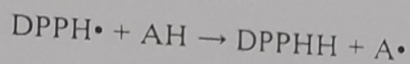
Co-ordinator  
IQAC,  
S. B. Arts & K. C. P. Science College,  
Vijayapur.

Head  
Dept. of Chemistry  
SB Arts & KCP Sc. College,  
Vijayapur.

## Antioxidant Activity ZrNPs from citrus sinensis juice and peel extract.

### DPPH radical scavenging activity

The principle of this assay is based on the reduction of DPPH, a free stable radical by antioxidant according to the following reaction.



During the reaction, alcoholic solution of DPPH turns from deep violet color to light yellow. For the assay, 100  $\mu\text{L}$  of various concentrations of extract (50, 100, 200, 400, 800, 1000  $\mu\text{g/ml}$ ) in methanol were added to 100  $\mu\text{L}$  of 0.01% methanolic DPPH solution. The plate was incubated for 30 min in the dark at ambient temperature and the absorbance was recorded at 517 nm using a spectrophotometer. Vitamin C at different concentrations (50, 100, 200, 400, 1000  $\mu\text{g/ml}$ ) was used as standard.

DPPH radical scavenging activity (%) was calculated as follows:

$$\text{DPPH scavenging activity (\%)} = \left[ \frac{(\text{Ac} - \text{As})}{\text{Ac}} \right] \times 100$$

### Nitric oxide scavenging activity

Nitric oxide was generated by sodium nitroprusside and measured by Griess reaction. Sodium nitroprusside (5 mM) in standard phosphate buffer saline solution (0.025 M, pH: 7.4) was incubated with different concentrations of ethanolic extract (50, 100, 200, 400, 800, 1000  $\mu\text{g/ml}$ ), Vitamin C as reference standard (50, 100, 200, 400, 800, 1000  $\mu\text{g/ml}$ ) and dissolved in phosphate buffer saline (0.025 M, pH: 7.4) and the tubes were incubated at 25 $^{\circ}\text{C}$  for 5 hr [19]. Control experiments without the test compounds but equivalent amounts of buffer were conducted in an identical manner. After 5 hours, 0.5 ml of incubation solution is removed and diluted with 0.5 ml of Griess reagent (1% sulphanilamide, 2% O-phosphoric acid and 0.1% naphthyl ethylene diamine dihydrochloride). The absorbance of the chromophore formed during diazotization of nitrite with sulphanilamide and its subsequent coupling with naphthyl ethylene diamine was read at 546 nm. All the determinations were performed in 6 replicates.

Percentage inhibition of nitric oxide radical was calculated as follows:

$$\text{Nitric oxide scavenging activity (\%)} = \left[ \frac{(\text{Ac} - \text{As})}{\text{Ac}} \right] \times 100$$

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Web: [www.bldeasbkcp.org](http://www.bldeasbkcp.org)



REF./ PÅæªÁiÁAPÀ : \_\_\_\_\_

Date /ç£ÁAPÀ: 24/04/2019

Dear Shivakumar H.,

I want to take a moment to thank Dr. Shivakumar H B L D E A's College of Pharmacy Vijayapur support, understanding, help, guidance, and encouragement through this difficult time regarding the Antioxidant and anti-inflammatory work of our M.Sc project work. Thank you so much.

Your continuing support and encouragement are appreciated more than you recognize it. Thank You for being so understanding regarding the antioxidant. I am grateful to you to show your trust and confidence in our college and we are sure that you will be pleased by the end results.

Thank you once again.

Yours

sincerely,

**Head**

Dept. of Chemistry  
SB Arts & KCP Sc. College,  
Vijayapur.

**IQAC, Co-ordinator**

S.B.Arts & K.C.P.Science College,  
Vijayapur.

**Principal,**

S.B.Arts & K.C.P. Science College,  
VIJAYAPUR.





Centenary Year 2010

B.L.D.E.ASSOCIATION'S  
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BIJAPUR



RE - ACCREDITED AT THE 'B' LEVEL

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Fax: 08352 - 261766 E-mail: bldesbkcp@gmail.com

REF./ PÅæªÁiÁAPÅ :

To, \_\_\_\_\_

Date: \_\_\_\_\_

Principal

S.S.M College of Pharmacy

Vijayapur

Sub: Regarding Visit to your Laboratory and Research Centre on 24<sup>th</sup> April .2019.

Respected Sir,

This is to bring to your kind notice that 1students of our College studying at M.Sc will visit your esteemed Laboratory on. 24<sup>th</sup> April .2019 The concerned faculty members will accompany them. Hence we request you kind self to permit our student to visit your laboratory. This visit to your Laboratory will make our student aware of various instruments and processes. We look forward to your co-operation in this matter. Further your laboratory is not responsible for any unforeseen accidents to the students during the visit to the laboratory.

Thanking you

Bijapur

24<sup>th</sup> April .2019.

**Head**

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Vijayapur.

**IQAC, Co-ordinator**  
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**Principal,**  
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