

# Indian Vision

of

# Political Thinking

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Professor Sanjeev Kumar Sharma is presently Vice Chancellor, Mahatma Gandhi Central University, Motthart, Bihar. He is also the General Secretary and Treasurer of the Indian Political Science Association for more than a decade. With a vast experience of toaching, research, and university administration of four decades. Dr. Sanjeev Kumar Sharma is actively engaged in formulation of ideas into action-oriented plans through mustained efforts. He is widely travelled academician with extensive exposure to Sanskrit, Hindi, and Urdu literature.



Dr.Ansuiya Nain is a young Political Scientist with intense academic vigour and enduring intellectual enthusianm. She has published research papers mainly on ancient Indian Politics. She is presently working on her ICSSR sponsored Post-Doctoral fellowship on Vogkuberna in Indian Sanskrit Literature.



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# STATE POLITICS IN CONTEMPORAR

Sanjeev Kuma Ansuiya Kumar ar Sharma Nain

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# **STATE POLITICSIN** CONTEMPORARY





The present book is a collection of the research work appearing in the Indian Journal of Political Science over last decade. The presentation is intended to highlight the dynamics of political functioning at state level in different parts and regions of the country. The present volume attempts to cover major dimensions of state politics apart from usual election studies and therefore, provides a kaleidoscopic picture of analytical understanding of the local and national issues from divergent regional perspectives. The book aims to conduct a contemporary survey of the changing dynamics of state politics with a national outlook.





पो. श्रीप्रकाम सिंह

निदेशक, दक्षिणी परिसर, दिल्ली विश्वविद्यालय, दिल्ली एवं आचार्य, राजनीति विज्ञान विभाग, दिल्ली विश्वविद्यालय। पूर्व में आचार्य, हॉ अम्बेडकर चेयर, इंडियन इंस्टीट्यूट ऑफ पबिलक एडमिनिस्टेशन, नई दिल्ली। आपकी कुल 14 पुस्तकें हैं, जिनमें संपादित, सड-संपादित और स्व-लिखित हैं। अनेकों लेख राष्ट्रीय एवं अंतर्राष्ट्रीय पत्र पत्रिकाओं में प्रकाशित किए हैं। आपको तीन दशकों से भी ज्यादा शिक्षण एवं शोध का अनुभव है।



सोकनंधन 'राष्ट्र सर्वोपरि' की मावना से परिपर्ण विचारकों एवं कर्मशीलों का लोकमंच है। विगत वर्षों में बह समकालीन नहीं को साझा करने. बीटिक विगर्श तथा आख्यान के लिए सबसे बडा मंच बनकर उभरा है जो न केवल देश बल्कि दुनिचा को भी प्रभावित कर रहा है। इस राष्ट्रीय विगर्श का मंत्र परानुमूति और नागरूकता के आधार पर उभरते राष्ट्रीय अपेक्षाओं, सामाजिक न्याच तथा सामाजिक समस्सता के आधार पर विकास को नाध्यन बनाते हुए सानाजिक गतिशीसता के समस्त प्रचासों का संगम



पुस्तक परिचय

लोक परम्पराई समाज को सांस्कृतिक विरासत को दर्पण तो हैं वे लोक के जीवन मूल्यों और धारणाओं की संवाहक भी हैं। परम्पराओं के संदर्भों व उनके विज्ञान के स्वरूप को समझने से ही राष्ट्र की वास्तविक समझ बनती है। पश्चिम के देशों की परम्पराएँ मत होती रही और नयी बनती गयी। भारतवर्ष की संस्कृति में परिवर्तनशीलता के साथ निरंतरता भी रही। हमारी कई परम्पराएँ हजारों वर्ष पुरानी हैं। इस जम्बू द्वीप पर चिरकाल से चली आ रही हैं परम्पराओं में प्रत्यक्ष एकरूपता व समान उत्पत्ति भी स्पष्ट सामने आती है। ऐतिहासिक विस्मृति के कारण इमने परम्पराओं को विभिन्नताओं और भेद के रूप में प्रस्तुत करना प्रारंभ कर दिया। इस पुस्तक में परम्पराओं पर आधारित भारत के उस स्व को पुन: स्थापित करने का प्रयास किया है जिस स्व की अनुभूति ने भारत को विश्व का क्षेप्ठतम राष्ट्र बनने का मार्ग प्रशस्त किया था। भारत के सांस्कृतिक पुनसत्थान के महायज्ञ में आहति अर्थण करने का प्रयास है।

- जे, नंबक्मार
- डॉ. कपिल तिवारी
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• प्रो. आशा







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लोक के

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# लोक परम्पराओ में स्व का बोध

लोक के स्व पर आधारित भारत के पुनरुत्थान की संकल्पना



संपादक प्रो. बृज किशोर कुठियाला प्रो. संजीव कुमार शर्मा प्रो. श्रीप्रकाश सिंह

> प्रज्ञा प्रवाह प्रतिष्ठान नई दिल्ली



प्रो. बुज किशोर कुठियाला व्यवसाय से अध्यापक, स्वभाव से चितक व कर्म से सामानिक कार्यकर्ता प्रो. बज किशोर कठियाला भारतीय समाज के पारस्परिक संवाद को प्रोत्साहित करने व शोध आधारित राष्ट्रहित के विचारों को प्रस्थापित करने में संलग्न है। विगत 52 वर्षों से मीडिया की शिक्षा व शैक्षणिक प्रबंधन में कार्यरत है। कुलपति के नाते 8 वर्ष के कार्यकाल में आपको 'संस्था निर्माता' के रूप में प्रतिष्ठा प्राप्त हुई। सम्प्रति: आप हरियाणा राज्य उच्च शिक्षा परिषद, प्रज्ञा प्रवाह प्रतिष्ठान टस्ट, पंचनद शोध संस्थान और भारतीय चित्र साधना के अध्यस है।



प्रो, संजीव कमार शर्मा भारतीय राजनीति विज्ञान परिषद के दशकाधिक अवधि राष्ट्रीय महासचिव एवं कोषाध्यक्ष, दि इंडियन जर्नल ऑफ पोलिटिकल साइन्स तथा भारतीय राजनीति विज्ञान शोभ पत्रिका के पूर्व संपादक तथा राजनीति विज्ञान विभाग, चौधरी चरण सिंह विश्वविद्यालय, मेरठ के सम्प्रति आचार्य व अध्यक्ष हैं। आप महात्मा गांधी केन्द्रीय विश्वविद्यालय, मोतिहारी के कुलपति रह चुके हैं। आप प्राचीन भारतीय संस्कृत साहित्य और राजनीतिक चिन्तन को भारतीय दुष्टि के अध्येता हैं। विगत 38 वर्षों से शिक्षण, अनुसंधान व प्रशासन में संलग्न हैं।

## विध्नेश कुमार इतिहासकार

प्रोफेसर एवं अध्यक्ष इतिहास विभाग चौधरी चरण सिंह विश्वविद्यालय, मेरठ (पूर्ववर्ती मेरठ विश्वविद्यालय, मेरठ)

# शिक्षा

बी एससी , एन ए (इतिहास) एम.फिल. (गोल्ड मैडल) पीएच ही.

शोध जन्मव 32 वर्ष अध्यापन अनुभव 27 वर्ष

# प्रमुख प्रकाशन

यगयगीन हरितनापुर मेरट के पाँच हजार वर्ष मेरत मंडल का स्वर्णिम अतीत गाजियाबाब के चार हजार वर्ष 1857 का विप्लय The Baraun Estate 1857 IN 1857 : Original Mutiny Narratives, Vol-1, Meerut 1857 IN 1857 : Original Mutiny Narratives Vol- II, Muzaffarnagar, Saharanpur and Haridwar Exploring 1857 Re-exploring Gandhian Movements in the Upper Ganga-Yamuna Doab Meerut College Since 1892 : A Brief History of Three Centuries

भारतीय स्वतन्त्रता संघर्ष में मेरत मंडल के दलित वर्ग की भूमिका

राजा रतनवन्द और उनका युग बन्दा वीर बैरागी

उत्तर प्रवेश के स्वतन्त्रता सेनानी चौधरी रध्वीर नारायण सिंह (बनारस अधिवेशन से असहयोग आन्दोलन जपरान्त चजवोह तक)

उत्तर प्रवेश के स्वतन्त्रता सेनानी चौधरी रधवीर नारायण सिंह (असहयोग आन्दोलन से मेरठ अधिवेशन तक)

यगयगीन सम्भल

युगयुगीन हरिद्वार

भारतीय स्वतन्त्रता संग्राम : एक पुनरावलोकन 1857 की भारतीय क्रान्ति के अज्ञात व अल्पज्ञात सेनानी भारतीय स्वतन्त्रता संघर्ष के अज्ञात व अल्पज्ञात सेनानी (1857-1947 \$0)





फ्लैट नं. A.1, प्रथम तल, राधा कुंज, लक्ष्मी विहार, च्यू गोल्डन टॉवर, शास्त्री नगर, मेरठ-250 005 फोन : 9897060534



# 1857 की भारतीय क्राब्ति B अज्ञात एव अल्पज्ञात सेनानी

विष्नेश कुमार

RP







# पुस्तक परिचय

भारतीय स्वतन्त्रता संग्राम वस्तुतः आधुनिक विश्व के इतिहास का महत्त्वपूर्ण अध्याय है जिसका मूल जबवेश्य औपनिवेशिक ब्रिटिश साम्राज्यवाद की दासता से भारत को मुक्त कराना था। यह मुख्यत: 10 मई, 1857 को मेरठ (उ.प्र.) की घरती से प्रस्फुटित हआ, जिसे इतिहासकार प्रोफेसर विघ्नेश कुमार के मतानुसार "। 8 5 7 की भारतीय क्रन्ति" की संज्ञा से सम्बोधित किया जाना ही सर्वथा न्यायोवित एवं साक्ष्य-संगत है।

1857 की भारतीय कान्ति यथार्थ में सशस्त्र क्रन्ति थी जो शीघ्र ही प्रायः तत्कालीन सम्पर्ण भारत भर में विस्तारित हुई, यद्यपि इसके आँचलीय स्वरूप देश, काल और परिस्थिति से प्रभावित थे। इसकी असफलता में भी भारतवर्ष का विराट उदय होने की सामर्थ्य सिद्ध हुई। वासदेव बलवन्त फड़के (1872), बालगंगाधर तिलक, लाला लाजपत राय, महामना मदन मोहन मालवीय, स्वामी श्रद्धानन्द, ऐनी बीसेंट, बिपिन चन्द्र पाल आदि की गरमदलीय धारा एवं उसकी सडवतीं धारा में गोपाल कृष्ण गोखले. महाला गाँधी और रघुबीर नारायण सिंह आदि की नरमवलीय धारा एवं राम प्रसाद बिस्मिल, भगत सिंह, सुखदेव, राजगुरू, बटुकेश्वर दत्त, ठाकुर रोशन सिंह, अशफाक उल्ला खाँ, विष्णु भारण दुबलिश व मास्टर सुर्यसेन दा आदि की क्रान्तिकारी धारा तथा नेताजी सुभाष चन्द्र बोस व उनकी आजाव हिन्द फौज आदि की पुनः सज्ञस्त्र क्रान्ति की धारा आदि धाराओं के असंख्य देशभक्तों ने भारतवर्ष की मुक्ति में विचार व कर्म की अपनी-अपनी सामर्थ्य-शक्ति से योगदान किया ।

किन्तु इन महापुरुषों व इनकी विचार-प्रेरणा से प्रेरित असंख्य भारतीयों ने स्थानीय स्तर पर भी राष्ट भवित की साधना की थी जिनके नाम तथ्यत: काल के गाल में अल्पज्ञात व अज्ञात डोकर रह गये।

प्रस्तृत ग्रन्थ उक्त अग्तिम पंक्ति में सुचीवदा किये जा सकने वाले अल्पज्ञात व अज्ञात राष्ट्रभक्तों के कृतित्व व व्यक्तित्व को उजार करने का विनग्र प्रयास भर है।

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Dr Alok Kumar Singh is working as an Assistant Professor in Department of Statistics RBS College, Agra. He has more than five years of teaching experience and seven years of research exposure. His Research areas includes, Outliers, Spatial data, Modeling and Inference, Applied Statistics, Distribution Theory, etc. He has research articles in SCOPUS, UGC-care indexed as well as peer reviewed journals with impact factors. He has reviewed many research articles. Dr Singh received his Graduation and

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Dr. Mukesh Kumar Sharma is Professor, Department of Mathematics, Chaudhary Charan Singh University, Meerut. He has more than 20 years teaching and research experience. He has guided four Ph.D. students and 11 M. Phil. Projects. More than 100 research papers in reputed journals and several book chapters in edited books in Springer, Taylor & Francis and AIP proceedings are If to his credit. He has also completed two research projects awarded

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# FUNDAMENTAL OF MACHINE LEARNING

# **DR.KHONGDET PHASINAM** MUKESH KUMAR SHARMA



# **MEDICINE:** LIGHT IN TWILIGHT

# Prof. Vikas Sharma



In *Medicine : Light In Twilight* the narrator describes various shades of medical life and confirms the utility of medicines in everyday life. Various pathies have their utility in modern society though Allopathic medicines enjoy the top position. Vaidya ji earns a lot of money after prescribing Allopathic medicines. Dr. Kamya and Dr. Preetilata make money even during the Corona pandemic. The miseries of the patients of Afghanistan need everyone's pity and sympathy. Girija, like Santiago, does not lose her courage and patience in all the odd situations of life and continues to teach students with full vigour. Like saints, Vaidya ji is admired for his philanthropic zeal. Efforts of Indian Government are admirable as nine medical colleges have been planned in U.P. alone to take care of sick people. The authorities have got to be admired for facing Corona with vigour, zeal, and full enthusiasm. The novel answers the question — How to live?



Professor Vikas Sharma is hailed as a wondrous and astonishing author, ever since his debut novel "Raah Ke Pathar" themed around Hindu-Muslim unity, released in the year 2021 which is now procurable in English translation entitled "Never Together, Never Apart". He is primarily a Poet and a Novelist. There are fifty research papers to his credit, which have been published in national and international journals. He has also published an

anthology of short stories and poetry entitled 'Epiphanies' under his name. He has not only guided and supervised but also helped his more than twenty research scholars who have successfully been awarded Ph.D under his able guidance. Prof. Sharma is presently Head of the Department of English at Chaudhary Charan Singh University, Meerut (U.P.). Deeply interested in delivering lectures related to politics, literature, social and cultural issues, he is popular for teaching comparative method of literature to his students. When not writing or teaching, he can be spotted immersed in conferences and seminars, discussing social and literary topics. Being a member of editorial board of three international and national journals, Prof. Vikas Sharma is a very fascinating personality. His aim is to appeal to the hearts of his readers and students. 'LOVE'S NOT TIME'S FOOL' is his first English Novel along with 'I A S TODAY', a second novel written by him which is already popular among readers, and '498 A: FEARS & DREAMS' that is third novel to dwell upon . His fourth novel, 'MEDICINE: LIGHT IN TWILIGHT' is a meritorious representation of fiction for a discerning reader.





# イナンした」 FEARS AND DREAMS

# PROF. VIKAS SHARMA

In 498A : Fears and Dreams the author asserts that right knowledge, right philosophy, and right conduct are main pillars of society, and condemns ego, lechery, greed, violence, falsehood, untruth, unwisdom, hypocrisy etc. Still he hopes for a bright and new prosperous society if people decide to give up deceit, cunningness, and wickedness. Happy married life can be led by couples if they follow the dictates of tolerance, compromise, self-help, personal duty as well as personal freedom. Tanvi, Anjula, and G.K. are responsible for their miseries and loneliness as they go astray and fail to compromise with realities of married life. Men have to realize that women are not mere toys to be played with. Here an effort has been made to support the just demands of women as mental liberty is equally important for them too. Moreover, this fiction has been related with fine arts and truth. Of course, each person has to be conscious of her/his responsibilities to society at large.



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## About the Author





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**AGRICULTURE AND** 

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Dr. Neha Garg Prof. Yogendra Singh





# 18

# COVID-19: GENERAL INTRODUCTION, EPIDEMIOLOGY AND VACCINATION

Authors: Devendra Kumar, Y. Vimala and Priyanka Nehra

# ABSTRACT

There is a new public health crises threatening the world with the emergence and spread of 2019 novel coronavirus (2019-nCoV) or the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus originated in bats and was transmitted to humans through yet unknown intermediary animals in Wuhan, Hubei province, China in December 2019. There have been around 96,000 reported cases of coronavirus disease 2019 (COVID-2019) and 3300 reported deaths to date (05/03/2020). The disease is transmitted by inhalation or contact with infected droplets and the incubation period ranges from 2 to 14 d. The symptoms are usually fever, cough, sore throat, breathlessness, fatigue, malaise among others. The disease is mild in most people; in some (usually the elderly and those with comorbidities), it may progress to pneumonia, acute respiratory distress syndrome (ARDS) and multi organ dysfunction. Many people are asymptomatic. The case fatality rate is estimated to range from 2 to 3%. Diagnosis is by demonstration of the virus in respiratory secretions by special molecular tests. Common laboratory findings include normal/ low white cell counts with elevated C-reactive protein (CRP). The computerized tomographic chest scan is usually abnormal even in those with no symptoms or mild disease. Treatment is essentially supportive; role of antiviral agents is yet to be established. Prevention entails home isolation of suspected cases and those with mild illnesses and strict infection control measures at hospitals that include contact and droplet precautions. The virus spreads faster than its two ancestors the SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV), but has lower fatality. The global impact of this new epidemic is yet uncertain.

Key Words: Corona virus, Covid-19, Vaccine and ACE-2 Receptor

# **1. INTRODUCTION**

The 2019 novel coronavirus (2019-nCoV) or the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) as it is now called, is rapidly spreading from its origin in Wuhan City of Hubei Province of China to the rest of the world. Till 05/03/2020 around 96,000 cases of coronavirus disease 2019 (COVID-19) and 3300 deaths have been reported. India has reported 29 cases till date. Fortunately, so far, children have been infrequently affected with no deaths. But the future course of this virus is unknown [1]. This article gives a bird's eye view about this new virus. Since knowledge about this virus is rapidly evolving, readers are urged to update themselves regularly.

# History

Coronaviruses are enveloped positive sense RNA viruses ranging from 60 nm to 140 nm in diameter with spike like projections on its surface giving it a crown like appearance under the electron microscope; hence the name coronavirus. Four corona viruses namely HKU1, NL63, 229E and OC43 have been in circulation in humans, and generally cause mild respiratory disease.

There have been two events in the past two decades wherein crossover of animal betacorona viruses to humans has resulted in severe disease. The first such instance was in 2002–2003 when a new coronavirus of the  $\beta$  genera and with origin in bats crossed over to humans via the intermediary host of palm civet cats in the Guangdong province of China [2]. This virus, designated as severe acute respiratory syndrome coronavirus affected 8422 people mostly in China and Hong Kong and caused 916 deaths (mortality rate 11%) before being contained. Almost a decade later in 2012, the Middle East respiratory syndrome coronavirus (MERS-CoV), also of bat origin, emerged in Saudi Arabia with dromedary camels as the intermediate host and affected 2494 people and caused 858 deaths (fatality rate 34%).

# Origin

In December 2019, adults in Wuhan, capital city of Hubei province and a major transportation hub of China started presenting to local hospitals with severe pneumonia of unknown cause. Many of the initial cases had a common exposure to the Huanan wholesale seafood market that also traded live animals. The surveillance system (put into place after the SARS outbreak) was activated and respiratory samples of patients were sent to reference labs for etiologic investigations [3]. On December 31st 2019, China notified the outbreak to the World Health Organization and on 1st January the Huanan sea food market was closed. On 7th January the virus was identified as a coronavirus that had >95% homology with the bat coronavirus and >70% similarity with the SARS- CoV. Environmental samples from the Huanan sea food market also tested positive, signifying that the virus originated from there. The number of cases started increasing exponentially, some of which did not have exposure to the live animal market, suggestive of the fact that human-to-human transmission was occurring. The first fatal case was reported on 11th Jan 2020. The massive migration of Chinese during the Chinese New Year fuelled the epidemic. Cases in other provinces of China, other countries (Thailand, Japan and South Korea in quick succession) were reported in people who were returning from Wuhan. Transmission to healthcare workers caring for patients was described on 20th Jan, 2020. By 23rd January, the 11 million population of Wuhan was placed under lock down with restrictions of entry and exit from the region. Soon this lock down was extended to other cities of Hubei province. Cases of COVID-19 in countries outside China were reported in those with no history of travel to China suggesting that local human-to-human transmission was occurring in these countries [4]. Airports in different countries including India put in screening mechanisms to detect symptomatic people returning from China and placed them in isolation and testing them for COVID-19. Soon it was apparent that the infection could be transmitted from asymptomatic people and also before onset of symptoms. Therefore, countries including India who evacuated their citizens from Wuhan through special flights or had travellers returning from China, placed all people symptomatic or otherwise in isolation for 14 d and tested them for the virus.

Cases continued to increase exponentially and modelling studies reported an epidemic doubling time of 1.8 d. In fact on the 12th of February, China changed its definition of confirmed cases to include patients with negative/ pending molecular tests but with clinical,

radiologic and epidemiologic features of COVID-19 leading to an increase in cases by 15,000 in a single day. As of 05/03/2020 96,000 cases worldwide (80,000 in China) and 87 other countries and 1 international conveyance (696, in the cruise ship Diamond Princess parked off the coast of Japan) have been reported. It is important to note that while the number of new cases has reduced in China lately, they have increased exponentially in other countries including South Korea, Italy and Iran. Of those infected, 20% are in critical condition, 25% have recovered, and 3310 (3013 in China and 297 in other countries) have died. India, which had reported only 3 cases till 2/3/2020, has also seen a sudden spurt in cases. By 5/3/2020, 29 cases had been reported; mostly in Delhi, Jaipur and Agra in Italian tourists and their contacts. One case was reported in an Indian who traveled back from Vienna and exposed a large number of school children in a birthday party at a city hotel. Many of the contacts of these cases have been quarantined [5].

These numbers are possibly an underestimate of the infected and dead due to limitations of surveillance and testing. Though the SARS-CoV-2 originated from bats, the intermediary animal through which it crossed over to humans is uncertain. Pangolins and snakes are the current suspects



Fig.1: Timeline of the key events of the COVID-19 outbreak.

In late December 2019, several health facilities in Wuhan, in Hubei province in China, reported clusters of patients with pneumonia of unknown cause<u>6</u>. Similarly to patients with SARS and MERS, these patients showed symptoms of viral pneumonia, including fever, cough and chest discomfort, and in severe cases dyspnea and bilateral lung infiltration. Among the first 27 documented hospitalized patients, most cases were epidemiologically linked to Huanan Seafood Wholesale Market, a wet market located in downtown Wuhan, which sells not only seafood but also live animals, including poultry and wildlife [6]. According to a retrospective study, the onset of the first known case dates back to 8 December 2019. On 31 December, Wuhan Municipal Health Commission notified the public of a pneumonia outbreak of unidentified cause and informed the World Health Organization (WHO)9 (Fig. 1).

By metagenomic RNA sequencing and virus isolation from bronchoalveolar lavage fluid samples from patients with severe pneumonia, independent teams of Chinese scientists identified that the causative agent of this emerging disease is a beta-corona virus that had never been seen before. On 9 January 2020, the result of this etiological identification was publicly announced (Fig. 1). The first genome sequence of the novel coronavirus was published on the Virological website on 10 January, and more nearly complete genome sequences determined by different research institutes were then released via the GISAID database on 12 January7. Later, more patients with no history of exposure to Huanan Seafood Wholesale Market were identified. Several familial clusters of infection were reported, and nosocomial infection also occurred in health-care facilities. All these cases provided clear evidence for human-to-human transmission of the new virus. As the outbreak coincided with the approach of the lunar New Year, travel between cities before the festival facilitated virus transmission in China. This novel coronavirus pneumonia soon spread to other cities in Hubei province and to other parts of China. Within 1 month, it had spread massively to all 34 provinces of China [7]. The number of confirmed cases suddenly increased, with thousands of new cases diagnosed daily during late January 15. On 30 January, the WHO declared the novel coronavirus outbreak a public health emergency of international concern. On 11 February, the International Committee on Taxonomy of Viruses named the novel coronavirus 'SARS-CoV-2', and the WHO named the disease 'COVID-19'.

The outbreak of COVID-19 in China reached an epidemic peak in February. According to the National Health Commission of China, the total number of cases continued to rise sharply in early February at an average rate of more than 3,000 newly confirmed cases per day. To control COVID-19, China implemented unprecedentedly strict public health measures. The city of Wuhan was shut down on 23 January, and all travel and transportation connecting the city was blocked. In the following couple of weeks, all outdoor activities and gatherings were restricted, and public facilities were closed in most cities as well as in countryside. Owing to these measures, the daily number of new cases in China started to decrease steadily.

However, despite the declining trend in China, the international spread of COVID-19 accelerated from late February. Large clusters of infection have been reported from an increasing number of countries. The high transmission efficiency of SARS-CoV-2 and the abundance of international travel enabled rapid worldwide spread of COVID-19. On 11 March 2020, the WHO officially characterized the global COVID-19 outbreak as a pandemic. Since March, while COVID-19 in China has become effectively controlled, the case numbers in Europe, the USA and other regions have jumped sharply. According to the COVID-19 dashboard of the Center for System Science and Engineering at Johns Hopkins University, as of 11 August 2020, 216 countries and regions from all six continents had reported more than 20 million cases of COVID-19, and more than 733,000 patients had died. High mortality occurred especially when health-care resources were overwhelmed. The USA is the country with the largest number of cases so far [8].

Although genetic evidence suggests that SARS-CoV-2 is a natural virus that likely originated in animals, there is no conclusion yet about when and where the virus first entered humans. As some of the first reported cases in Wuhan had no epidemiological link to the seafood market, it has been suggested that the market may not be the initial source of human infection with SARS-CoV-2. One study from France detected SARS-CoV-2 by PCR in a stored sample from a patient who had pneumonia at the end of 2019, suggesting SARS-CoV-2 might have spread there much earlier than the generally known starting time of the outbreak in France.

However, this individual early report cannot give a solid answer to the origin of SARS-CoV-2 and contamination, and thus a false positive result cannot be excluded. To address this highly controversial issue, further retrospective investigations involving a larger number of banked samples from patients, animals and environments need to be conducted worldwide with well-validated assays [9].

# Morphology

SARS-CoV-2 isolated from nasopharyngeal and oropharyngeal samples were inoculated on the vero cells. In order to identify SARS-CoV-2, inoculated cells were prefixed using 2% paraformaldehyde and 2.5% glutaraldehyde, and transmission electron microscopy was performed. The structure of SARS-CoV-2 observed by examining infected cells after 3 days post infection. Electron microscopy revealed the coronavirus-specific morphology of SARS-CoV-2 with virus particle sizes ranging from 70 to 90 nm observed under a wide variety of intracellular organelles, most specifically in vesicles [10]. Due to high sequence similarity, the structure of SARS-CoV-2 is speculated to be the same as SARS-CoV [11]. The surface viral protein spike, membrane, and envelope of coronavirus are embedded in host membrane-derived lipid bilayer encapsulating the helical nucleocapsid comprising viral RNA (Fig. 2) [12]. The structure of spike and protease of SARS-CoV-2 has been resolved, which provides an opportunity to develop a newer class of drugs for treatment of COVID-19.



Fig-2: Structure of SARS-CoV-2. SARS-CoV-2 has surface viral proteins, namely, spike glycoproteins (S), which mediates interaction with cell surface receptor ACE2. The viral

membrane glycoprotein (M) and envelope (E) of SARS-CoV-2 are embedded in host membrane derived lipid bilayer encapsulating the helical nucleocapsid comprising viral RNA

# Epidemiology

Epidemiology is essential to the fight against any disease. The study of how diseases spread, and why, has loomed large in the struggle to understand, contain and respond to COVID-19. Analyses of data on infections and deaths, and projections from studies that model the virus's spread, have driven policy decisions all over the world. Many of these, such as locking down countries, imposing quarantines, and mandating social distancing and mask-wearing, are now commonplace.

# **Role of ACE-2 Receptor**

SARS-CoV-2 differs from the original SARS-CoV by 380 amino acid substitutions, which translates to differences in five of the six vital amino acids in the receptor-binding domain between the viral spike (S) protein with surface expressed human ACE2.41 Viral S-proteins are well established as a significant determinant of host tropism and represents a key target for therapeutic and vaccine development. Additionally, host cell proteases are important for SARS-CoV-2 entry and infection of cells as both S-proteins and ACE2 are proteolytically modified during the process [13]. ACE2-mediated cardiovascular protection is lost following endocytosis of the enzyme along with severe acute respiratory syndrome-coronavirus (SARS-CoV-2) viral particles. Ang II (angiotensin II) levels elevate with increased activity of angiotensin 1 receptors (AT1R) at the cost of ACE2/ Ang 1–7 driven pathways leading to adverse fibrosis, hypertrophy, increased reactive oxygen species (ROS), vasoconstriction, and gut dysbiosis. ADAM17 (a disintegrin and metalloproteinase 17)-mediated proteolytic cleavage of ACE2 is upregulated by endocytosed SARS-CoV-2 spike proteins. Activation of the AT1R by elevated Ang II levels also further increases ADAM17 activity. ADAM17 correspondingly also cleaves its primary substrate releasing soluble TNF- $\alpha$  (tumor necrosis factor- $\alpha$ ) into the extracellular region where it has auto- and paracrine functionality [14]. TNF- $\alpha$  activation of its tumor necrosis factor receptor (TNFR) represents a third pathway elevating ADAM17 activity. TNF-α along with systemic cytokines released due to SARS-CoV-2 infection and in conjunction with comorbidities such as diabetes mellitus and hypertension can lead to a cytokine storm. TMPRSS2 indicates transmembrane protease serine 2.



Fig-3: Role of ACE2 (angiotensin-converting enzyme 2) in the pathogenesis of coronavirus disease 2019 and the inflammatory response

# PREVENTION

# Wearing masks in the community

When to wear a mask — Local guidelines on mask-wearing depend on the level of community transmission and vaccination rates. The World Health Organization (WHO) recommends mask-wearing as part of a comprehensive approach to reducing SARS-CoV-2 transmission in either indoor or outdoor settings where there is widespread transmission and social distancing is difficult as well as indoor settings with poor ventilation (regardless of ability to distance. In the United States, the CDC advises unvaccinated individuals to wear masks when in public and around other individuals outside their household. The CDC has also issued a mandate requiring masks for all individuals on public transportation (including taxis and ride-shares) and at transportation hubs (eg, airports, bus or ferry terminals, railway stations, seaports). Recommendations on mask-wearing for individuals who have been vaccinated are discussed elsewhere. (See "COVID-19: Vaccines to prevent SARS-CoV-2 infection", section on 'Post-vaccine public health precautions'. [15]

Individuals who are caring for individuals with suspected or documented COVID-19 at home should also wear a mask when in the same room as that person. Precautions for individuals with suspected or documented COVID-19 and their caretakers are discussed in detail elsewhere. (See "COVID-19: Infection control for persons with SARS-CoV-2 infection", section on 'Isolation at home'.

Type of masks — In the United States, cloth masks and disposable masks (eg, commercially available surgical masks) are recommended for community use. The CDC specifies that the mask recommendation does not include N95 respirators, which should be reserved for health care workers. Cloth masks should be made with several layers of tightly woven fabric. All masks should fit snugly over the face without gaps. Strategies to improve mask fit include using a mask with an adjustable nose bridge, wearing a cloth mask over a disposable mask, knotting the ear loops of a disposable mask to cinch the sides of the mask and secure it against the face, using masks with ties rather than ear loops, and using a mask brace. Masks should not have exhalation valves. The CDC notes that the importance of fit and filtration likely increases in situations where the risk of exposure is high (eg, prolonged close contact indoors with people outside the household). Some individuals may opt to wear KN95 respirators, which are intended to have a very high filtration efficacy when fit tightly against the face and are available commercially. However, people should be aware that many marketed KN95 respirators do not meet the advertised filtration standards; if used, KN95 respirators that have been granted emergency use authorization by the FDA should be chosen. Detailed information on the types of recommended masks can be found on the CDC website.

The WHO also recommends non-medical masks for most individuals and has issued standards for the ideal composition of a cloth mask to optimize fluid resistance and filtration efficiency. However, it recommends that medical masks be used by individuals at risk for severe COVID-19 (eg, individuals >60 years old or with high-risk underlying conditions) when in public settings where distancing is not feasible and by any household members of individuals with suspected or confirmed COVID-19 when in the same room. In certain European countries, medical masks (including respirators, such as N95 masks) are recommended in certain indoor public settings, including on public transportation and in stores.

When advising patients on the use of masks, clinicians should counsel them to avoid touching the eyes, nose, and mouth when putting on or removing the mask, to practice hand hygiene before and after handling the mask, and to launder cloth masks routinely. Clinicians should also emphasize that the mask does not diminish the importance of other preventive measures, such as social distancing and hand hygiene. Patients can also be counselled that masks have not been associated with impairment in gas exchange, including among patients with underlying lung disease.

**Post-exposure management** — In areas where SARS-CoV-2 is prevalent, all residents should be encouraged to stay alert for symptoms and practice appropriate preventive measures to reduce the risk of infection. (See 'Personal preventive measures' above.)

Additional measures are recommended for those who have had close contact with a patient with suspected or confirmed COVID-19 in the community (including during the 48 hours prior to that patient developing symptoms and regardless of whether the individuals involved were wearing masks). In the United States, the CDC suggests the following for unvaccinated individuals:

• Daily monitoring for fever, cough, or dyspnea for 14 days. Individuals who develop such signs or symptoms should stay home and maintain distance from other individuals, including those in their household, if they are not doing so already (as below), and contact their medical providers. (See "COVID-19: Outpatient evaluation and management of acute illness in adults", section on 'Management and counseling for all outpatients'.)

- Self-quarantine at home, with maintenance of at least six feet (two meters) from others at all times. In particular, they should avoid contact with individuals at high risk for severe illness. (See "COVID-19: Clinical features", section on 'Risk factors for severe illness'.) The preferred quarantine period is 14 days following the date of the last exposure (so long as the individual remains asymptomatic) and is based on the incubation period for SARS-CoV-2 infection. (See "COVID-19: Clinical features", section on 'Incubation period'.) However, the CDC acknowledges that shorter durations of quarantine may ameliorate the associated community burdens and adherence challenges in exchange for a slightly increased risk of post-quarantine transmission. Thus, it notes that acceptable alternatives are:
  - A seven-day quarantine period, provided that the individual remained asymptomatic throughout and has a negative NAAT or antigen SARS-CoV-2 test within 48 hours of the planned end of quarantine
  - ➤ A 10-day quarantine period, provided that the individual remained asymptomatic throughout

These intervals were based on modeling performed by the CDC that suggested median post-quarantine transmission rates of 4 percent (range 2.3 to 8.6) for the 7-day quarantine with negative NAAT and 1.4 percent (range 0.1 to 10.6) for the 10-day quarantine, compared with 0.1 percent (range 0 to 3.0) for the 14-day quarantine. In another study of individuals who had household exposure to SARS-CoV-2 and underwent daily symptom monitoring and polymerase chain reaction (PCR) testing, there was an 81 percent probability that those who were asymptomatic with negative testing through day 7 would remain so through day 14.

If quarantine periods shorter than 14 days are used, individuals should be counseled to continue symptom monitoring and maintain strict adherence to other prevention efforts within and outside of the household (eg, mask wearing, physical distancing) for a full 14 days.

For household members of an individual with COVID-19 who cannot physically separate themselves (eg, maintain physical distance, sleep in a separate room, use a separate bathroom) from that person, the quarantine period begins once the isolation period of the individual with COVID-19 is complete [16].

# VACCINE

There are so many vaccines are available in market, but there are three main which are used.

Mode of action and overview of the strategies used for vaccine development and delivery are given in (Fig.4) and the data of People vaccinated against COVID-19, 24 July-2021. (Fig-5)

# (a) Covaxin

COVAXIN (BBV152) is India's first indigenous, whole-virion, inactivated vaccine developed by Bharat Biotech in collaboration with the Indian Medical Research Council (ICMR) and the National Institute of Virology (NIV) for the treatment of highly infectious disease Covid-19.COVAXIN is an inactivated vaccine obtained from the SARS-CoV-2 strain isolated at the NIV, Pune, an Indian virology research institute.

The vaccine is used along with immune stimulants, commonly known as vaccine adjuvants (Alhydroxiquim-II), to improve immune response and longer-lasting immunity. The vaccine candidate is produced through the formulation of the inactivated virus with Kansasbased ViroVax'sAlhydroxiquim-II adjuvant. COVAXIN mainly contains  $6\mu g$  of whole-virion inactivated SARS-CoV-2 antigen (Strain: NIV-2020-770), and the other inactive components such as  $250\mu g$  aluminium hydroxide gel,  $15\mu g$  TLR 7 / 8 agonist (imidazoquinolinone), 2.5mg TM 2-phenoxyethanol, and phosphate buffer saline up to 0.5ml.

The vaccine requires no sub-zero storage and reconstitution requirement and available for use in multi-dose vials, stable at 2-8.

# (b) Covishield

The **Oxford–AstraZeneca COVID-19 vaccine**, codenamed **AZD1222**, and sold under the brand names **Covishield** and **Vaxzevria** among others, is a viral vector vaccine for prevention of COVID-19. Developed by Oxford University and AstraZeneca, it is given by intramuscular injection, using as a vector the modified chimpanzee adenovirus ChAdOx1. Studies carried out in 2020 showed that the efficacy of the vaccine is 76.0% at preventing symptomatic COVID-19 beginning at 22 days following the first dose and 81.3% after the second dose. Another analysis showed that, for symptomatic COVID-19 infection after the second dose, the vaccine is 66% effective against the Alpha variant (lineage B.1.1.7), and 60% against the Delta variant (lineage B.1.617.2).

# (c) Sputnik V

Gam-COVID-Vac/Sputnik V (Gamaleya Research Institute/Health Ministry of the Russian Federation/Acellena Contract Drug Research and Development). Scientists of the Russian Research Institute Gamaleya developed the only heterologous prime-boost SARSCoV-2 vaccine candidate thus far in order to circumvent the challenge of reduced immunogenicity due to antibodies raised against the viral vector after the first immunization. The adenoviral vector serotype used for the prime vaccination is different than the adenoviral serotype used as a booster. Hence, replicationdefective Ad26 was selected to deliver the genetic information for Spike protein during the first vaccination and recombinant replication-defective Ad5 for the second. The vaccine candidate, recently renamed Sputnik V, was tested in two small scale Phase 1/2 trials that involved 38 participants each. The results from the two studies were published on September 4th77, 3 weeks after President Putin had announced the authorization of Sputnik V for limited use [17]





An Attenuated live pathogen vaccine strategies consist in administering a debilitated form of live pathogen. Lengthy cell culture passaging in non-human cell lines or animals decreases the virulence of the pathogen. This type of vaccines usually elicits robust and long-term memory immune responses after a single dose. **B** Inactivated pathogen vaccines contain whole pathogen that has been submitted to heat or chemical treatment inactivation. **C** Subunit vaccines are prepared either from antigen purification of pathogens replicated in cell cultures or from recombinantly expressed antigens. These vaccines commonly require adjuvant addition in order to deliver danger signals to antigen-presenting cells and provoke robust immune responses. **D** Virus-like particles can be self-assembled in and released from recombinant yeast cells or other expression systems such as the vaccinia virus expression system or even tobacco plants transfected with tobacco mosaic virus. E Viral vector vaccines use a genetically manipulated measles or adenoviral platform to express a foreign antigen commonly resulting in robust cellular and humoral response. F, G Lastly, nucleic acid (DNA and mRNA) vaccines are very quick to produce, yet were untested as successful human vaccine strategies. The nucleic acid codifying for an immunogenic protein of the pathogen once administered is captured by antigen-presenting cells that use it to express and present the antigen. These vaccines are predicted to have minor safety issues as nucleic acid is swiftly degraded within the human body.



Share of people fully vaccinated against COVID-19 Share of people only partly vaccinated against COVID-19

Fig.5: People vaccinated against COVID-19, 24 July-2021

# **Future perspectives**

COVID-19 is the third highly pathogenic human corona virus disease to date. Although less deadly than SARS and MERS, the rapid spreading of this highly contagious disease has posed the severest threat to global health in this century [18]. The SARS-CoV-2 outbreak has lasted for more than half a year now, and it is likely that this emerging virus will establish a niche in humans and coexist with us for a long time 166. Before clinically approved vaccines are widely available, there is no better way to protect us from SARS-CoV-2 than personal preventive behaviours such as social distancing and wearing masks, and public health measures, including active testing, case tracing and restrictions on social gatherings. Despite a flood of SARS-CoV-2 research published every week, current knowledge of this novel corona virus is just the tip of the iceberg. The animal origin and cross-species infection route of SARS-CoV-2 are yet to be uncovered. The molecular mechanisms of SARS-CoV-2 infection pathogenesis and virus-host interactions remain largely unclear. Intensive studies on these virological profiles of SARS-CoV-2 will provide the basis for the development of preventive and therapeutic strategies against COVID-19. Moreover, continued genomic monitoring of SARS-CoV-2 in new cases is needed worldwide, as it is important to promptly identify any mutation that may result in phenotypic changes of the virus [19]. Finally, COVID-19 is challenging all human beings.

Tackling this epidemic is a long-term job which requires efforts of every individual, and international collaborations by scientists, authorities and the public.

# Acknowledgement

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مارف نقوی کا شارتر قی پندتم یک کم زادی کے بعد انجرنے والے فنکاروں میں برتا ہے۔ آپ کی شہرت بطور شاعر، ڈرامہ نگار،اداکار وہدایت کار، خاکہ نگار،سفر نامہ نگاراور افسانہ نکار کے طور میتحکم ہے۔

مارف نفوی اطورافساند نگار کافی شہرت رکھتے ہیں۔ آپ کے افسانوں میں ترقی پسند محمر یہ بدرجہ اتم موجود ہے۔ آپ کے افسانوں میں لکھنڈ، دبلی ،ممبنی، لا ہور، کراچی، کلکت، یہ یہ کے شنگف شہر، اورافریقی ممالک کاندصرف ذکر ملتاہے، بلکہ بچی تصویر کیشی ملتی ہے۔ آپ ایک اب تلک تین افسانوی مجموعے ' تلاش سحز' پیاسی دھرتی جلتی جائے' اور 'سوے فردوس زیری نشائع ہو کر متبول ہو چکہ ہیں۔





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#### <u>दो शब्द</u>

लिव—इन—रिलेशनशिप : वर्त्तमान परिदृश्य नामक पुस्तक सामाजिक, व्यवहारिक व राजनीति विज्ञान में अनुसंधानकर्ताओं के लिए लाभदायक होगी मेरी शूभकामनाएं।

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लिव-इन-रिलेशनशिप' भारतीय समाज में उभरती नयी प्रवृत्ति है। माननीय उच्चतम न्यायालय द्वारा 'लिव-इन-रिलेशनशिप' के सम्बन्ध में दिये गये निर्णय इस तथ्य की पुष्टि करते हैं। डॉo जयवीर सिंह और सिरिल गौरन द्वार लिखी गयी यह पुस्तक 'लिव-इन-रिलेशनशिप' के विभिन्न पहलुओं की गहराई से पड़ताल कर जनमानस को इस सम्बन्ध में नये सिरे से सोचने पर विवश करती है।

लेखक को साधुवाद के साथ विशेषकर युवाओं के लिए पठनीय इस पुस्तक का मैं स्वागत करता हूँ।

> Prof. P.K. Mishra Ph.D (Edn.), Commonwealth Academic Fellow Head & Deen Dept. of Education C.C.S. University, Campus, Meerut

आज के बदलते परिवेश में लिव–इन–रिलेशन की प्रासांगिळता भी बढ़ रही है चूंकि यह आपसी सम्बन्धों पर आधारित रिलेश्न है यह रिलेशन भास्त में अपने पैर पसार रहा है इसलिये इसकी गहराई को जानना जरूरी है। मैंने यह पुस्तक पढ़ी है जो छात्रों, शिक्षकों एवं समाज से सराकार रखने वाले अनुसंधानकर्ताओं के लिये लाभप्रद होगी।

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## Printed Antennas for 5G Networks



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#### Planar Printed MIMO Antennas for 5G Access Points

Shobhit Saxena, Binod Kumar Kanaujia, Sachin Kumar, and Raj Mittra

**Abstract** The fifth-generation (5G) of wireless communication systems will mainly use two frequency bands, namely Sub-6 GHz (below 6 GHz) and millimetre wave (above 24 GHz). For maintaining a compact size of the entire 5G system, there is a growing interest in developing wideband planar printed massive multiple-inputmultiple-output (MIMO) antennas fabricated on a single substrate. The MIMO antennas for 5G applications can be designed to support linearly polarized (LP) and circularly polarized (CP) waves. Sometimes the change in polarization occurs between the transmitter and receiver. In such a scenario, the use of planar printed dual circularly polarized (Dual-CP) MIMO antennas will be quite useful. The proposed chapter provides an overview of various types of planar printed MIMO antennas designed on a single substrate for 5G access point applications. Some essential design issues and future research directions related to planar printed MIMO antennas will also be considered.

**Keywords** 5G  $\cdot$  Sub-6 GHz  $\cdot$  Millimetre wave  $\cdot$  Isolation  $\cdot$  LP  $\cdot$  CP  $\cdot$  Dual-CP  $\cdot$  MIMO

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#### Chapter 19

## Entomopathogenic nematode in national development through enhancing the socio-economic condition of Indian farmers

Ashok Kumar Chaubey Nematology Laboratory, Department of Zoology, Chaudhary Charan Singh University, Meerut, India

#### 19.1 Introduction

The most significant sector of Indian Economy is Agriculture. This sector in India has occupied about 60.45% of India's geographical area and is contributing approximately 16.1% of India's gross domestic product (GDP) (http:// www.agrimoon.com/). Small and marginal farmers with less than two hectares of land, account for 86.2% of all farmers, of which 27.9% is contributed by women. Over 85% of rural households depend on agriculture as their principal means of livelihood. India is the largest producer (25% of global production) and consumer (27% of world consumption). But most of the agroproducts are damaged by lots of pests (rodents, birds, insects etc.). Farmers together with agro-fertilizers have pesticides as a tool to control pests during the growing season of crops. In India, estimated crop losses due to the pest are worth of ₹6000 crores annually in which Insects contributing  $\sim 20\%$ . Problem can easily be assessed viz. Helicoverpa armigera alone losses to the tune of ₹1000 crore in crops like cotton, tomato, pigeon pea, groundnut, sorghum, pearl, millet and other crops of economic importance. It has been estimated that about ₹1200 crore worth of pesticides were used in India to control the bollworm complex of cotton. The degree of problem is accelerating and requiring the better control programme'in an environmentally safe manner in succeeding years. To reduce crop losses, tons of costly pesticides are being used by the farmers. The crop damage is caused highest by insects, followed by pathogens and weeds. Consequently, the use of chemical pesticides in agriculture has been an integral part of crop production in many regions, often at very high levels and unscientific pattern of application.

Earth is enthralled by vast diversity of life, and nematodes represent the second most specious rich phylum after Arthopoda. Nematodes are usually considered harmful because of the diseases they cause in humans and animals and the economic impact they have on many agricultural products. Among the nematodes, there is one group of nematodes that are effective against insect fauna and serve as good biocontrol agents and due to their pathogenecity against insect pests they are referred as entomopathogenic nematodes (EPN). EPN are soil-inhabiting, and they infect many different types of soil (born) insects, including the larval forms of moths, beetles and flies, as well as adult crickets and grasshoppers. EPN have been found in all inhabited continents and a range of ecologically diverse habitats, from cultivated fields to deserts. The most commonly studied genera (*Steinernema* and *Heterorhabditis*) are those that are useful in the biological control of insect pests (Gaugler, 2006).

Poinar (1979) listed nine families of nematodes (Allantonematidae, Diplogasteridae, Heterorhabditidae, Mermithidae, Neotylenchidae, Rhabditidae, Sphaerularidae, Steinernematidae, and Tetradonematidae) that are facultative or obligate parasites of insects. These nine families include species that attack insects and kill, sterilize, or alter host development. There are two promising genera viz. Steinernema (Steinernematidae) and Heterorhabditis (Heterorhabditidae) which having the symbiotic bacteria that belong to the genus Xenorhabdus and Photorhabdus respectively. These bacteria are carried in the intestinal vesicle of the nonfeeding infective stage of members of the Steinernematidae, and throughout the

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#### Chapter 8 Microbiology as an occupational hazard: risk and challenges

From the book <u>Medical Microbiology</u> Nazia Tarannum and Ranjit Hawaldar

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#### Abstract

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A large number of cases have been reported worldwide regarding occupationally acquired microbial diseases. These cases are of major concern because they have potential to cause pandemics. Among the various occupational health hazards, the most serious one is the risk caused by biological agents by viruses, fungi, bacteria and human parasites. The direct findinect confact for the concernum states in a materials and cultures also pose a health hazard. In current chapter, role of microbiology hazards in Various occupations, occupational zoonotic diseases, legislation, safety policies and biosafety concerned microbiological laboratories have been discussed.

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## Indian Government and Politics



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## Multifunctional MIMO Antennas Fundamentals and Applications

<sup>Edited by</sup> Yadwinder Kumar Shrivishal Tripathi Balwinder Raj

Shobhi b Saxina 2022-54

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#### 14. Mediative Fuzzy Pythagorean Algorithm to Multi-criteria Decision-Making and Its Application in Medical Diagnostic

Authors: M. K. Sharma, Nitesh Dhiman, Vandana, Vishnu Narayan Mishra Published in: Computational Modelling in Industry 4.0 Publisher: Springer Nature Singapore

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Literature

2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) Amity University, Noida, India. Sep 3-4, 2021

### <sup>22</sup>Estimation of SHG and LE-O Susceptibilities of InAs Crystal: Linear Absorption Taken into Account

Chandra P. Singh Department of Applied Sciences, Ch.Charan Singh University, Meerut-250004,U.P., India, c.ps.0051@gmail.com

Abstract- We applied a model involving two coupled anharmonic oscillators (electronic and ionic)to estimate the Second Harmonic Generation (SHG) and Linear Electro Optic (I.E-O) susceptibilities of InAs crystal. The crystal of InAs belongs to III-V group compounds owing cubic zinc-blende-type structure. Linear absorption is considered for the selected spectral region 1250 nm - 390 nm.So, the contribution of the imaginary part of the involved complex linear ionic susceptibility to the resultant SHG and LE-O susceptibilities is taken into account and hence the absolute value of complex-linear ionic susceptibility i.e.  $|\chi_i^{(1)}(\omega)|$ , is used in place of  $\chi_i^{(1)}(\omega)$  in the computation of SHG and LE-O coefficients. All of the four constants (nonlinear strength factors), appearing in the model, are determined with the help of experimental data of SHG susceptibility measured in the selected region of 1076 nm -535 nm. Application of such calculated nonlinear strength factors in the concerned modelled expressions, SHG and LE-O susceptibility coefficients are computed as a function of frequency to illustrate the dispersion in the region of 1250 nm -390 nm.

Keywords- Nonlinear Optics, Second Harmonic Generation, LE-O Susceptibility Coefficient, III-V Group Compounds, NLO Effects

#### I. INTRODUCTION

Extensive advances have been made in the understanding and application of nonlinear optical interactions since the invention of laser (around 1960). Both experimental, as well as theoretical research in the field of nonlinear optics, is represented by the determination of the absolute value of nonlinear susceptibility. C.G.Garrett [1] used a model with two coupled anharmonic oscillators (electronic & ionic) to predict the nonlinear susceptibilities for a simple diatomic, cubic material. With the limitation of 1-D (1-dimensional), the model should give a reasonable description of the behaviour of zincblende-type materials that are both diatomic and cubic. InAs is one of the III-V group compounds having a zinc-blende-type structure. Formerly, several models are applied by different workers to compute the second-order optical properties of III-V group compounds in the different regions of radiation. Some of such models are bond-charge model [2]-[4], charge-transfer model [5].S.S. Jha and N. Bloembergen, [6]; C.L. Tang[7] and C. Flytzaniset al. [8], also, have calculated the second-order optical susceptibility coefficients such as Second Harmonic Generation (SHG) and Linear Electro-Optic (LE-O) coefficient,

S.P. Khare \*Department of Physics, Ch.Charan Singh University, Meerut-250004, U.P., India, spkhare35@gmail.com BC-60

for III-V group compounds to which InAs belongs. Classically, none of the authors [5] [8], had obtained a dispersion relation to estimating the second-order optical susceptibilities, involving a simultaneous contribution from linear electronic and linear ionic susceptibilities for InAs along with other III-V group semiconducting compounds.Presently, the author applied a model to theInAs crystal to compute its nonlinear optical properties (SHG and LE-O susceptibility coefficients, here) in the selected spectral region of 1250 nm - 390 nm. For this, first, the four Nonlinear Strength Factors (NSF) appearing in our modelling, are computed with the help of existing available experimental data [9]. And then, as per the objectives of the author's present work, by using such calculated parameters; the author estimated the required LE-O and SHG coefficients as a function of the frequency. This way, the dispersion in the near infra-red (NIR) region of 1250 nm- 390 nm, is illustrated.

#### II. THEORETICAL ASPECTS

Garrett has taken one-dimensional lattice and writes the equations of motion in terms of configuration co-ordinates qe and qi for electronic and ionic oscillation respectively as,

$$\ddot{q}e + \omega e^2 q_e = \frac{e_e}{m_e} E \tag{1}$$

$$\frac{q_1}{\mu} + \frac{\omega_1 Z q_i}{\mu} = -\frac{\omega_1}{\mu} E$$
(2)

Here, me is the electronic mass,  $\mu$  is the reduced ionic mass, ee andei is the charges of the order of one electronic charge and defined in terms of cation, anion core and anion shell charges.  $\omega e$  is the resonant frequency associated with the dominant ultraviolet inter-band electronic transition responsible for the dispersion in the visible region and  $\omega i$  is the resonant frequency associated with transverse optical (TO) phonon frequency in the infrared region. qe is called electronic configuration co-ordinate associated with  $\omega e$  and qi is ionic configuration co-ordinate associated with  $\omega i$ . The polarization,

$$P = N[e_e q_e + e_i q_i]$$
And the linear susceptibility is
$$(3)$$

$$\chi(1) = \frac{N}{E\epsilon_0} [e_e q_e + e_i q_i] = \frac{N}{E\epsilon_0} e_e q_e + \frac{N}{E\epsilon_0} e_i q_i = \chi c(1) + \chi i(1)$$
(4)

where,  $\chi e(1)$  and  $\chi i(1)$  is electronic and ionic susceptibility respectively.For

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مرتبين: برديسراسلم جشيد بورى قالطرار الطار العلى

#### विध्नेश कुमार इतिहासकार

प्रोफेसर एवं अध्यक्ष इतिहास विभाग चौधरी चरण सिंह विश्वविद्यालय, मेरठ (पूर्ववर्ती मेरठ विश्वविद्यालय, मेरठ)

#### शिक्षा

बी एससी... एन ए. (इतिहास) एम.फिल. (गोल्ड मैडल) पीएच ही.

शोध जन्मव 32 वर्ष अध्यापन अनुभव 27 वर्ष

#### प्रमुख प्रकाशन

यगयगीन हरितनापुर मेरठ के पाँच हजार वर्ष गेरत मंडल का स्वर्णिंग अतीत गाजियाबाब के चार हजार वर्ष 1857 का विष्लव The Baraun Estate 1857 IN 1857 : Original Mutiny Narratives, Vol- I, Meerut 1857 IN 1857 : Original Mutiny Narratives Vol- II, Muzaffarnagar, Saharanpur and Haridwar Exploring 1857 Re-exploring Gandhian Movements in the Upper Ganga-Yamuna Doab Meerut College Since 1892 : A Brief History of Three Centuries भारतीय स्वतन्त्रता संघर्ष में मेरत मंडल के दलित वर्ग की भूमिका राजा रतनवन्द और उनका युग बन्दा वीर बैरागी

उत्तर प्रवेश के स्वतन्त्रता सेनानी चौधरी रक्षबीर नारायण सिंह (बनारस अधिवेशन से असहयोग आन्दोलन उपरान्त चजदोह तक)

उत्तर प्रवेश के स्वतन्त्रता सेनानी चौधरी रधवीर नारायण सिंह (असहयोग आन्दोलन से मेरठ अधिवेशन तक)

युगयुगीन सम्भल

युगयुगीन हरिद्वार

भारतीय स्वतन्त्रता संग्राम : एक पुनरावलोकन 1857 की भारतीय क्रान्ति के अज्ञात व अल्पज्ञात सेनानी भारतीय स्वतन्त्रता संघर्ष के अज्ञात व अल्पज्ञात सेनानी (1857-1947章0)



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भारतीय रिवतन्त्रता संघर्ष 9 अज्ञात 뎝 अल्पज्ञात सेनानी (1857-1947 tal.

विच्नेश कुमार







## भारतीय स्वतंत्रता संग्राम ः एक पुनरावलोकन

### विध्नेश कुमार

#### पुस्तक परिचय

भारतीय स्वतन्त्रता संग्राम वस्तुतः आधुनिक विश्व के इतिहास का महत्त्वपूर्ण अध्याय है जिसका मूल उददेश्य औपनिवेशिक ब्रिटिश साम्राज्यवाद की दासता से भारत को मुक्त कराना था। यह मुख्यत: 10 मई, 1857 को मेरठ (उ.प्र.) की धरती से प्रस्फुटित हुआ, जिसे इतिहासकार प्रोफेसर विघ्नेश कुमार के गतानुसार "1857 की भारतीय क्रन्ति" की संज्ञा से सम्बोधित किया जाना ही सर्वथा न्यायोधित एवं साध्य-संगत है।

"। 857 की भारतीय क्रन्ति" यथार्थ में सशस्त्र क्रान्ति थी जो शीघ्र ही प्रायः तत्कालीन सम्पूर्ण भारत भर में विस्तारित हुई, यद्यपि इसके आँचलीय स्वरूप देश, काल और परिस्थिति से प्रभावित थे। इसकी असफलता में भी भारतवर्ष का विराट उदय होने की सामर्थ्य सिद्ध हुई। वासुदेव बलवन्त फड़के (1872), बालगंगाधर तिलक, लाला लाजपत राय, महामना मदन मोहन मालवीय, स्वामी श्रद्धानन्द, ऐनी बीसेंट, बिपिन चन्द्र पाल आदि की गरमदलीय धारा एवं उसकी सड़वर्ती धारा में गोपाल कृष्ण गोखले. महात्मा गाँधी और रघुबीर नारायण सिंह आदि की नरमवलीय धारा एवं राम प्रसाद बिस्मिल, भगत सिंह, सुखदेव, राजगुरू, बटुकेश्वर दत्त, ठाकुर रोशन सिंह, अशफाक चल्ला खाँ, विष्णु, भारण दुबलिश व मास्टर सुर्यसेन दा आदि की क्रान्तिकारी धारा तथा नेताजी सुभाष चन्द्र बोस व उनकी आजाव हिन्द फौज आदि की पुनः सज्ञस्त्र क्रान्ति की धारा आदि धाराओं के असंख्य देशभक्तों ने भारतवर्ष की मुक्ति में विचार व कर्म की अपनी-अपनी सामर्थ्य-शक्ति से योगवान किया ।

किन्तु इन महापुरुषों व इनकी विचार-प्रेरणा से प्रेरित असंख्य भारतीयों ने स्थानीय स्तर पर भी राष्ट भवित की साधना की थी जिनके नाम तथ्यत: काल के गाल में अल्पज्ञात व अज्ञात डोकर रह गये।

प्रस्तुत ग्रन्ध उक्त अग्तिम पंक्ति में सुचीवदा किये जा सकने वाले अल्पज्ञात व अज्ञात राष्ट्रभक्तों के कृतित्व व व्यक्तित्व को उजार करने का विनग्र प्रयास भर है।

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(1857-1947 \$o)



भारतीय स्वतन्त्रता संघर्ष के अज्ञात एवं अल्पज्ञात सेनानी (1857-1947 まの)





#### पुस्तक परिचय

भारतीय स्वतन्त्रता संग्राम वस्तुतः आधुनिक विश्व के इतिहास का महत्त्वपूर्ण अध्याय है जिसका मूल उददेश्य औपनिवेशिक ब्रिटिश साम्राज्यवाद की दासता से भारत को मुक्त कराना था। यह मुख्यत: 10 मई, 1857 को मेरठ (उ.प्र.) की धरती से प्रस्फुटित हुआ, जिसे इतिहासकार प्रोफेसर विध्नेश कुमार के मतानुसार "। 8 5 7 की भारतीय क्रन्ति" की संज्ञा से सम्बोधित किया जाना ही सर्वथा न्यायोवित एवं साध्य-संगत है।

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# LOVE'S NOT TIME'S FOOL



An effort has been made in Love's Not Time's Fool to inspire the readers to face social and economic problems without feeling tense. The author has attached due importance to the rights of women and attracts the attention of the rich people towards the problems of widows, orphans and helpless old people. The theme of love has been painted with the colours of false love, extra-marital affairs and flirtations for merely sexual satisfaction but then the depth of pure love for marriage has been proved victorious towards the end. Richa is bold enough to accept her club-footed son Amitabh and pays money regularly to Nora to take care of this child. She hides this fact from her husband Malya who gets injured playing cricket. As an impotent man he continues to work hard for footwear products and dies with another hit of baseball in U.S.A. Richa, a young widow, gets married with her loving employee Abhilash. The positive side of life has aptly been elaborated in this novel so as to encourage readers to have patience in adverse circumstances. The terrible effects of Corona-19 have been described in details and hence the novel is a criticism of life.



Prof. Vikas Sharma is already a well acclaimed author of Hindi novel - Raah Ke Pathar. Also a poet, researcher and teacher, Prof. Sharma is currently professor and head in the department of English of Chaudhary Charan Singh University, Meerut (U.P.). A professor of English Literature, who has varied interests in politics, culture ,history and language - Prof. Sharma decided to venture in the creative field of writing novels in the pandemic

when he got bored of reading his favourite writers in isolation. His first novel Raah ke Pathar themed around Hindu - Muslim Unity released in the year 2021 and was well received by the readers. Love's Not Time's Fool is his first English novel after the successful and well received Hindi one. Prof. Vikas Sharma has published an anthology titled 'Epiphanies' under his name. He has fifty research papers published in international and national journals and twenty research scholars have successfully been awarded Ph.D under his supervision. A member of the editorial board of three international and national journals, Prof. Vikas Sharma aims to be his students' favourite author beside being their favourite professor.



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## Prof. Vikas Sharma

Juxtaposing the world of greed against that of detachment, IAS Today is a story of Romesh, a Gandhian, who gets married with Trishala Vasu during his training period and later tries to uproot crimes to the best of his abilities. In the same world is also Tinny, a son of noble parents who becomes a ring leader and forms his own gang with Kale, Penny, Vallu and Gannu and leads a lecherous life with Kanti, Rewati and Swati. With his sin bin already full, will he face the repercussions for his mis-deeds? With strong female characters, the novel presents the readers with a conflict between love and lust, violence and nonviolence, rustic and urban life. Still the question remains to be answered "Is Fancy a deceiving elf?"



Prof. Vikas Sharma is already a well acclaimed author of both Hindi and English novels. Also a poet and researcher, Prof. Sharma is currently working as professor and head in the department of English of Chaudhary Charan Singh University, Meerut (U.P.). When not writing or teaching, you can easily find him discussing politics, literature and

culture in a gathering or re-reading his favourite writers in isolation. His first novel 'Raah ke Pathar' themed around Hindu - Muslim Unity released in the year 2021 and was well received by the authors. He has fifty research papers published in international and national journals and twenty research scholars have successfully been awarded Ph.D under his supervision. A member of editorial board of three international and national journals, Prof. Vikas Sharma has also published an anthology titled 'Epiphanies' under his name. IAS Today is his second English novel after the successful and well received novel 'Love's Not Time's Fool'. Mobile : +919410454723



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پروفيسراسكم جمشيد بودي



د اکترا دشادسسیانوی



Naame : Arif Naqvi ke Naam Mashaheer ke Khutoot Edited by Prof. Aslam Jamshedpuri



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'बहुरूपिया' में बहुरंगी धज की कहानियां हैं। इन कहानियों में समाज के विभिन्न हिस्सों या वर्गों के लोग हैं। पढ़े-लिखे है तो बेपढ़े भी हैं, शहरों के हैं तो गाँवों के भी हैं, मालिक हैं तो नौकर भी हैं, देसी हैं, विदेशी हैं, हिंदू हैं, मुसलमान हैं, स्त्री हैं, पुरुष हैं, बुलन्दशहरी हैं तो इलाहाबादी भी हैं। शोषण, बेरोजगारी और गरीबी है तो अपने प्राण देकर भी रवायतों को निभाने वाले और बाअदब-खानदानी लोग भी हैं।

गरज यह कि एक बहुवर्णी समाज जिसके वैविध्य कि एकरुपता के ताने-बाने में कसने की कवायद न के समय में दिखाई देती है, वह इन कहानियों अपने वास्तविक और बहुरंगी रूप में मौजूद है। -डॉ. प्रज्ञा पाठक





रति पॉकेट बुक्स



हिन्दी शिक्षण में कौशलों का विकास HINDI SHIKSHAN ME KAUSHLON KA VIKAS

Edited by: Prof. Vijya Rani Dhondhiyal, Dr. Sangeeta Pawar, Dr Arun Kumar Chaturvedi,

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#### वैश्विक स्तर पर हिन्दी भाषा के प्रति दृष्टिकोण

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**प्रो. नवीन चन्द्र लोहनी** संकायाध्यक्ष कला एवं हिन्दी विभाग

चौधरी चरण सिंह विश्वविद्यालय मेरठ

वैश्विक स्तर पर हिंदी कई रूपों में पहुँची। एक रूप शिक्षण का है और एक रूप है मीडिया माध्यमों का। मीडिया माध्यमों में फिल्म, गीत, समाचार, रेडियो, टेलीविजन सीरियल एवं कार्यक्रमों के बन्द अब एक और रूप में सोशल मीडिया है। इसी प्रकार अनुवाद से हिंदी दुनिया के कई देशों में पहुँची। आज हिंदी लेखन भी आज दुनिया के महत्वपूर्ण देशों में हो रहा है। इन सब रूपों में हिंदी अवश्य गई पर विकास और प्रचार के संदर्भ में वह कई भाषाओं से बहुत पीछे छूट गई है। सविधान में दर्ज देश की 22 भाषाओं से उसका अधोषित तौर पर द्वंद्व जारी है अब यह बोलियों तक आ गया है। जब कि हिंदी की बोलियों के प्रयोग को भाषा के सामने खड़ा करने की राजनीति चल रही है। हिंदी को कभी तमिल, कन्नड़, मिजो, असमी, कन्नड़, मराठी से लड़ाई दिखाई जाती हैं तो कभी उर्दू से और अब एक तबका ऐसा खड़ा हो रहा है जो हिंदी की संस्कृत से प्रतियोगिता या विरोध की बात करने लगा है। इस सबका एक ही कारण था की संविधान में तात्कालिक तौर पर अंग्रेजी को कुछ समय तक सहमाषा के रूप में अनुमति दी गई, जिसका धड़ल्ले से उपयोग आज भी जारी है। हिंदी के कठिन होने के नाम पर, अन्य भाषाओं को कमजोर करने के नाम पर या उनके क्षेत्र में घुसपैठ कर उनकी अस्मिता को कमजोर कर देने के नाम पर डराया गया और यह राजनैतिक कुचर्चा आज भी

हिन्दी शिक्षण में कौशलों का विकास : 25

वाले अनेक आयोजक हिंदी क्षेत्र के होते थे क्योंकि उन्हें विदेशों में भारतीयों के बीच ऐसा करना अपनी राजनीति के लिए ठीक लगता है। ऐसे लोगों का यह भी तर्क होता है कि भाषा तो केवल माध्यम है जैसे भी हो बातचीत होनी चाहिए। इस प्रकार के अनेक उदाहरण है इससे पता चलता है कि विश्व के अनेक देशों में रहने वाले भारतीय प्रवासियों की संपर्क भाषा केवल हिंदी नहीं है, कुछ राजनीति करने वाले इसे देश के बाहर भी राजनीति का शिकार बना रहे हैं। इसलिए भारत के बाहर हिंदी को लेकर असमंजस पर विदेशी भी भारतीयों की हिंदी विषयक उदासी की अक्सर चर्चा करते हैं।

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हिंदी के प्रति एक रूप हिंदी का वैश्विक स्तर पर शिक्षण का भी है। विश्व के अनेक नागरिक हिंदी या संस्कृत भारत को जानने के लिए भी यढ़ते हैं, भारत भ्रमण के लिए, भारतीय सांस्कृति को जानने के लिए और अब अपने देश में हिंदी संबंधी रोजगार के लिए हिंदी पढ़ने वालों की संख्या भी पर्याप्त है। अब भारत के बाहर महत्वपूर्ण देशों में हिंदी अध्ययन हो रहा है। इसमें बहुत बड़ा योगदान भारत के बाहर हिंदी शिक्षण की व्यवस्था और प्रसार का दायित्व निर्वाह का कार्य भारतीय सांस्कृतिक संबंध परिषद का भी है। परंतु आज तक भी दुनिया में अनेक देशों में हिंदी पीठ नहीं है और कोरोना के कारण भी अनेक देशों में पीठों पर नियुक्ति नहीं हुई है। कई देशों ने हिंदी अध्यापकों की नियुक्ति अपने आप की है। इससे हिंदी के प्रति वैश्विक भाषा होने और स्वीकार्यता बढ़ने की बात की जाती है। विदेशों में हिंदी फिल्मों, मीडिया माध्यमों, हिंदी गीतों से हिंदी प्रचार होता है और सोशल मीडिया में ब्लॉग लेखन, फेसबुक, ट्विटर, इंस्टाग्राम सहित सभी माध्यमों में हिंदी प्रयोग बढ़ा है।

भारत में राष्ट्रीय शिक्षा नीति 2020 के आने के बाद हिंदी को लेकर मंथन आरंभ हुआ है। परंतु सवाल है कि नई शिक्षा नीति आने के बाद मातृभाषा एवं स्थानीय भाषा राज्यभाषा के रूप में हिंदी का प्रयोग कितने राज्य करेंगे, इसके बाद में प्राथमिक और माध्यमिक शिक्षा में हिंदी प्रयोग किस रूप में बढ़ेगा और कितने राज्य उच्च शिक्षा तक उपाधियों के लिए हिंदी अध्ययन अथवा हिंदी माध्यम से शिक्षण आरंभ करेंगे। इसकी शुरुआत तो बहुत अच्छी नहीं है। इस संबंध में लेखा-जोखा कुछ वर्षों में हमारे सामने आएगा, लेकिन वर्तमान स्थिति में विधि, तकनीकी, विज्ञान, समाज विज्ञान, चिकित्सा शिक्षा सहित महत्वपूर्ण क्षेत्रों में हिंदी माध्यम से शिक्षण उस रूप में नहीं हो प्रारंभ हो पाया जिसकी आवश्यकता और अपेक्षा थी। यद्यपि भारत सरकार द्वारा स्थापित वैज्ञानिक एवं तकनीकी शब्दावली आयोग द्वारा शब्दकोशों, नए शब्दों का निर्माण किया गया है तथापि इन विषयों में हिंदी में पुस्तक लेखन कम हैं। इसका प्रभाव शिक्षण पर भी दिखाई देता है। गैर हिंदी भाषी कहे जाने वाले राज्यों में सरकारी कामकाज तो हिंदी में नहीं हो रहा है, शैक्षणिक क्षेत्र में भी हिंदी अध्ययन के अलावा नहीं के बराबर है। इसलिए अब हिंदी के अन्तर्राष्ट्रीय स्तर पर न्यापित होने से पहले देश में हिंदी को सभी रूपों में स्थापित करने की आवश्यकता है। सबसे अधिक आवश्यकता शिक्षण माध्यमों और रोजगार में हिंदी को लाने की है। इसका तात्पर्य यह भी है कि सभी विषय हिंदी में पढ़ाए जाएं और सरकारी ही नहीं व्यावसायिक और निजी संस्थाओं में भी हिंदी में काम का प्रचलन बढ़े। आज हम हिंदी क्षेत्रों में भी इस रूप में उदासी देखते हैं। हिंदी भाषी राज्यों में भी छोटे व्यापारिक संस्थानों से लेकर, विद्यालयों से विश्वविद्यालयों तक के नाम अँग्रेजी में लिखे मिलते हैं। इस स्तर पर बहुत क्रांतिकारी नीति की आवश्यकता है क्योंकि निजी संस्थानों में कंप्यूटर और तकनीकी में हिंदी बहुत कम है। ऐसी संस्थाओं में हिंदी का प्रयोग बढ़ेगा तभी हिंदी निखरेगी।

असम से पंजाब और केरल से जम्मू कश्मीर तक सभी राज्यों में हिंदी का शिक्षण, प्रचार हो रहा है किंतु यह सब हिंदी विभागों में ही हो रहा है और कई राज्यों में द्वितीय भाषा के रूप में उसकी मजबूत स्थिति भी बनी है। आवश्यकता सभी प्रकार के विषयों के शिक्षण में हिंदी की तो है ही इसी प्रकार गैर हिंदी क्षेत्र से कहे जाने वाले राज्यों में राजभाषा के रूप में भी उसकी मान्यता हो।

यह भी तय है कि राजभाषा के संवैधानिक प्रावधानों को लागू करते हुए अगर हिंदी प्रयोग मंत्रालयों, कार्यालयों, दूतावासों में बढ़ेगा तभी भविष्य में दुनिया की पहली भाषा के रूप में हिंदी भी देख सकते हैं। अंग्रेजी के वैश्विक प्रसार को पिछले कुछ दसकों से हिंदी और चीनी मंदारिन ने ही टक्कर दी है पर अंग्रेजी के सैकड़ों वर्षों के प्रसार के सामने दोनों भाषाएँ अपने देश की अधिक जनसंख्या के कारण संख्या में अधिक हैं। अनतर्राष्ट्रीय प्रसार में सभी महाद्वीपों और देशों में अग्रेजी की कम या अधिक उपस्थिति बनी रहेगी। हाल के वर्षों में चीन और जापान जैसे देशों ने अंग्रेजी को स्वीकार किया वह ध्यान रखना पड़ेगा। यह भी आवश्यक है कि हमें अब अंतरर्राष्ट्रीय रूप में हिंदी के विविध स्थानीय प्रयोग और लेखन शैलियों को मान्यता देनी होगी और देश-विदेश में व्यापक प्रचार-प्रसार करना होगा। साथ ही शिक्षण और रोजगार माध्यमों में हिंदी को लाना होगा। हिंदी के प्रयोग को गति और सामर्थ्य तभी मिलेगी जब वह वास्तविक जमीन पर अपनी

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# हिन्दी शिक्षण में कौशल का विकास

**डॉ. सविता मोहन** पूर्व निदेशक उच्च शिक्षा उत्तराखण्ड

अनेक लिपियों बीस से अधिक लिखित भाषओं और एक हजार से अधिक बोलियों की संपदा वाला हमारा देश एक दिस्तृत भाषायी क्षेत्र है इस विविधता का कारण देश की विभिन्न संस्कृतियों और उनके इतिहास हैं। यह आवश्यक है कि हमें अपनी भाषाओं को आधिकाधिक व्यवहार की भाषा, व्यापार की भाषा, साहित्यिक संप्रेषण की भाषा, राजकाज की भाषा, औपचारिक, अनौपचारिक व औपचारिकेत्तर शिक्षा की भाषा तथा अन्यान्य प्रयोजनों की भाषा बनाकर सभी दृष्टिकोण से व्यापकता की पराकाष्ठ्रा तक पहुंचाना होगा। तभी हम अपने देश में अपनी भाषा में अपनी शिक्षा और संस्कृति का वर्चस्व बवाए रख सकेंगे।

स्वाधीनता प्राप्ति से पहले देश में ऐसी छोटी बड़ी अनेक रियासतें थी जिनके राजकाज की भाषा के रूप में हिन्दी का प्रयोग था। राष्ट्रीय अभिलेखागार और प्राचीन पुस्तकालय से इस बात की पुष्टि हो जाती है कि गुजरात से लेकर बिहार तक तथा यध्यप्रदेश से लेकर पंजाब तक के रूम्पूर्ण क्षेत्र में बिखरी हुई हिंदू रियासतों के बीच आपसी पत्र व्यवहार का नाध्यम एक हिंदी ही थी। स्वराज्य प्राप्ति से पहले गांधीजी के युग में खादी राष्ट्रीयता ही वर्दी धी और हिंदी राष्ट्रीय, कात्मता की प्रतीक है।

आज हिन्दी भारत तक ही सीमित नहीं है अपितु फिजी सूरीनाम दक्षिण अफ्रीका मॉरीशस कनाडा आदि अनेक देशों में भी फल-फूल रहा है। विश्व के अनेक विवविद्यालयों में हिंदी पढ़ी जा रही है। हिंदी भाषा के विविध रूपों में छात्रों के शिक्षण प्रशिक्षण कौशल की अभिवृद्धि कर सकती है यह एक विचारणीय प्रश्न है

हिन्दी शिक्षण में कौशलों का विकास : 33

हिंदी अध्ययन के नए प्रयोग क्षेत्रों, मध्य एशिया, चीन, कोरिया, जापान में हिंदी अध्ययन बढ़ा जरूर है पर वहाँ भी उन देशों की सरकारें और वहाँ के नागरिकों की रूचि या व्यावसायिक आवश्यकता बड़ा कारण है। इसका एक कारण भारत सरकार की ओर से हिंदी शिक्षण कार्यक्रम वैश्विक स्तर पर नहीं चल रहा है भारत में और विदेशों में सुनियोजित हिंदी प्रसार की नीति नहीं दिखाई दे रही है। आज दुनिया के अधिकांश देश है तो मानते हैं कि भारत की आर्थिक शक्ति बढ़ रही है तो उसकी भाषा को भी स्वीकार करना होगा, लेकिन वह कौन सी भाषा होगी इस पर भारत को अपनी नीति तय करनी होगी क्योंकि अंतरराष्ट्रीय स्तर पर भारतीयों द्वारा प्रयोग में लाई जाने वाली अंग्रेजी ही प्रतिनिधि भाषा की तरह आती है। इसलिए हिंदी के प्रति अंतरर्राष्ट्रीय स्तर पर जो दृष्टिकोण रहेगा वह भारत सरकार के सरकारी कार्यालयों से लेकर प्रवासी भारतीयों की अपनी भाषा के प्रति लगाव से भी तय होगा। अगर भारत के बाहर भारतीयों में हिंदी प्रतिनिधि भाषा

बनकर उभरती है और सरकारी कार्यालयों में हिंदी प्रयोग बढ़ता है तथा हिंदी शिक्षण

माध्यम और रोजगार माध्यम बनती है तभी विदेशों में भी हिंदी को एक महत्वपूर्ण

भाषा के रूप में स्वीकार किया जाएगा अन्यथा हम विदेशों और महत्वपूर्ण स्थानों

पर अंग्रेजी प्रयोग कर हिंदी को लगातार निरुत्साहित ही करते रहेंगे।

भाषाओं के प्रति उपेक्षा पूर्ण व्यवहार और विदेशों में सीमित उपयोग होने के कारण अमेरिका, ब्रिटेन जैसे देशों में भी हिंदी शिक्षण करने वाले संस्थान कम हो रहे हैं।

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### মকাগক-

राष्ट्रीय चेतना प्रकाशन हेड ऑफिस- के. 58/63, दारा नगर वाराणसी, उ०प्र०, पिन कोड- 221001 क्षेत्रीय कार्यालय-म.नं. 381, वार्ड नं०- 12 चन्धासी, मुगलसराय, चन्दौली, पिन कोड-232101 Mob. : 9415286192, 9838851004 E-mail: cpsvinay@gmail.com

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प्रावित्र . हिन्द्र सं आवर्धे श्रेम स्वरूत विकास दत्र । अल्प्र विकास प्रावृत्र्याल को लग्दी स्वर्ध काल हिंग त्या रहते कहा स्वर्धा का दर्भ काल्या विकास स्वरूत प्राय काल्या के निर्दात की रहता की न्यान प्राय

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रिक्रम के सेवारी वार्तीका ही, फिट, की सपतित

विदेशे महादिया, किनोवा, विकार, प्रजनावित्व और भाषा के क्षेत्र में दिखेल कार्य करते. इन क्षेत्र दर्जन से अविक मुख्याने का लेखना संसंघटना।

देश की प्रतिहित प्रतिकाओं, पुल्लाओं और प्रायणा पत्री में औं से अधिक लेखी कर प्रायणांग।

र्तन्त दालको के दिवये, टेर्ल्डीवलक में करने करती हुए अरु में अर्थवल प्रमुख अंतरराष्ट्रीय संग्रेडिया, सहीयकरी अर्थी का संग्रेयलन

रम्हेन पर अनस्तित्व तत्वनी हमा थे में अधिक समयते में समाउँभा। कैयर्वास्त प्रवित्वा स्वासामीक सुरू। व प्रतिक सामग्रार एवं केम्सल क्रांब की राजी जालक।

स्ट्रांडीर अप्रकार प्रमार का उत्तर व से लाग मंगा क्यांडीकर की आवधा तीम करें से अवस्थान के लाग में कई 1915 में इंगायन कॉलेज, दिल्ली कि विवल्ज के प्रवार्त पर का देता।





राताब्दी साहित्यकार मूल्योकन मुंखला-१ फणीरतरताथ रेणु

संपादक: प्रो. रमा • डॉ. मनीप

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<sup>संपादक</sup> प्रो. रमा डॉ. मनीष



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# Relevance of Gandhian Thought

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*Editor* Dr. Awadhesh Kumar Dr. Gautam Gupta *Co-editor* Dr. Bhawana Singh



AKHAND PUBLISHING HOUSE DELHI (INDIA)



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डॉ० विद्या सागर सिंह

वैश्विक राजनीति एवं साहित्य का अन्योन्याश्रय संबंध रहा है। वैश्विक परिवर्तनों से साहित्य भी अछूता नहीं है। भारतीय राजनीति का आरंभिक दौर राष्ट्रीय आंदोलन की घटनाओं परिघटनाओं से संचालित था। जब नरम दल और गरम दल राष्ट्रीय आंदोलन का नेतृत्व कर रहे थे तब समय की सीमा को पार कर भारतीय राजनीति का परिदृश्य अचानक बदलता है। दक्षिण अफ्रीका में गाँधी जी द्वारा किये गये संघर्ष एवं प्रयोग गाँधीवाद का मुख्य हथियार बनते हैं। 9 जनवरी, 1915 ई० को गाँधी जी का भारत आगमन होता है। पहले वे भारत भ्रमण करते हैं फिर भारतीय राजनीति एवं समाज का मुआयना करते हैं। गाँधी जी महसूस करते हैं कि अंग्रेजों से लड़ाई में प्रत्येक भारतीय को अपनी भूमिका निभानी पड़ेगी। इसलिए उन्होंने कांग्रेस पार्टी को जन सरोकारों से जोड़ा। चवन्निया मेम्बर बनने लगे। जो कांग्रेस 1885 से अपनी स्थापना के साथ ही मध्यवर्ग से आगे नहीं बढ़ सकी थी, 1920 में अखिल भारतीय स्वरूप ग्रहण कर लेती है। अंतिम जन तक कांग्रेस की बयार पहुँचती हैं जिसमें गाँधी रूपी सुगंध को महसूस किया जा सकता था। गाँधीवाद दरअसल, गाँधी जी की वैचारिक प्रतिबद्धता एवं प्रयोग का समुच्चय है जिसे परिस्थितियों की शान पर चढ़ाकर चमक पैदा की जा सकती है। यह वैचारिक पुंज है।

# The Era of New Media

# Deepika Verma

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था जय फांतवर्ष ने अनेकों ब भारतीय मुंदरमें में उद्धर करत कड़ा क लगाई ा काम्य व यो अपने मेलवडाली स्वरूप को प्राप्त किया। אמיין ביאבוי ה הנויננה עיימה עי שניקות שט אחויין גע STR. 2527 20 र कर विकास, जेप्रासन्य दुए, छहबाहर बंध, कुखण्यत एवं पुरु à-stani≑n dit 7 ाता, मूल्याहिक देन्स्यार म सर्वीच्य आभ्यात्मिक पुस्ता के स्वाधाव प्रमाण ें में तर्पत पार्टन इंग्रेस्ट्रान के निर्मान करते में राजधिक व सेनिक म्लिसा का विस्तृत वर्णन व रेटकू प्रभावि कर प्रारंग प्रत्य प्रत्य के हर्ग्य तथ्य कार्तीय विरवर्षियत्वराधी य प्रतियालयों के स्थातक क्राजा प्रयास ने सम्पत्न के लिए ही बाहे प्रायेन हे हो, साथ में पाल को विभिन्न प्रतासीयक सेपानों की ग्रेस स्टब्स् स्टिव स्टब्से महला च है। प्राचान आरती रही सेतिका के विषय में बर, ए.व. बर्भर : विद्यूपी कांगर से ही मंद्रवी, प्रदिम्पी एवं अध्ययसंदी। शिवा के प्रति विशे মাজারীজিবের বি রোলিবের জিরিলোমে समुप्तवे, व्यक्ति, प्रोकेवर कर का फल ट.प्र के बुलन्द्राइर बिले में हुआ था। आपने गठन परिजय कार हुए के बल्ला बिस्सवियाल में एप.ए. एमप्रिल, एस.एस.मी. मे-एम.डी. डी.लिट वच्चेच्यां चार को हैं। ज्यानी 1995 में बाद स्वतन हारा नियुनित प्राय करके साढ़े गीन यह उपकोय प्रारोतिहासिक काल से कषापा काल लंदन मार्जियालय में अध्यान कर किया कामल में हो, कीर इतिहास सिमान थे, अग्रेमीहे विरक्तमालय में प्रेजेसर पूर्व जिमायान्तर पर पर कार्यात है। उस तक आपके लगभग 40 सोधाव विभिन्न व्यर्नला ए.वी. कौर होप राज-दोखानों व पुलकों में प्रकृतित हो पुरु हैं। इसे के साम आपने अब तक विभिन्न अन्तर्राष्ट्रीय, राष्ट्रीय व अन्य संपेटियाँ में लागमा 55 में अविक स्टेशपत्रों का अलग किया है। आपने कई इतिमय, समाजवितानों म सोम वियानी से सम्हीना कार्यलयकों में भी इतिप्रतिय को है। वर्ष 2010 में अगरको Yomber Scientific and Social Science Research Fernizzion CO 3000748 "Sharing Mind Between India and Korea Though Petry" Pava ve analytic start a History & Buddinist Literature is an a certaria WART & PAT REV. MUSAN CHO OH-HYUN International Creative Mind Awa 54 2010 H जन्मदीय किया नगा अन इस इतिहास के निर्धालन सहस्वपूर्व वियमों पर आपकी 09 पुस्तकों प्रकारित हो पुन्ती हैं य wit sector an ad sizes of \$1 works any Della Public Library Board Ministry of Culture Govial India Wit wooder ware to any Reffered and Poer Reviewed Interdiciplinary Re Animal Clobal Values William William generate & a faret stores the state it 340 य: **र 1100.00** ISBN : 978-81-951512-6 चूनिवर्सिटी पव्लिकेशन्, 22/4735, प्रकाश दाप बिल्डिंग अंसारी रोड, दरिपायज नर्व दिल्ली-110-002



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यह पुराक करूप पुरस्क के रूप में है। मुसाक प्राय के विभिन्न निरावीदालपों व पहलिसालयें को स्लाक एव स्लाहकोक कार्य्य के लिए ये अति पंचीनी है हो, साम ही यह प्राय को विभिन्द प्रायसनिक सेवालों की परीक्षाओं के लिए से विशेष रूप से प्रदल्पण है।

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NMP. Verma is the Senior Most Professor at Babasaheb Bhimmo Ambedkar University, Lucknow, India. He was the First Head, Department of Economics, First Dean of School of Arabedkar Suidies constituting the Social Sciences department and the First Dean of School of Economics & Commerce. He has also served BEAU as the Acting Vice Chancellor, and later also served as the Vice Chancellor of the University. He is the First President of the Association of the Socio-Economic Development Studies (ASEDS 2013). He was the Conference President (2019) of Uttar Pradesh & Uttarakhand Economic Association. He was also the First Editor in Chief of International Journal of Social Science and Development Policy jointly published by BEAU & ASEDS (2015-20). He has edited many books, including the Recession and Its Aftermath: Adjustments in United States, Australia and the Emerging Asia (Springer 2013) and the most recent one, the Routledge Hardbook of Exclusion, Inequality and Stigma in India (Routledge, Taylor Sc. Francis, London & New York 2020).

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## Growth and Instability in Indian Agriculture

- Sanjeev Kumar, Sanjay Kumar Upadhyay

The Indian economy has changed structurally over time with the anticipated decline in agriculture's share in the gross domestic product (GDP). Despite a fall in its share from 55.1 percent in 1950-1951 to 17 percent in 2008-2009, agriculture remains important for two major reasons. First, the country has achieved self- sufficiency in food production at the macro.

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#### (About the Author)

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# Chapter 6 Development of eLearning in the Commonwealth Countries

Pradeep Kumar Misra Chaudhary Charan Singh University, Meerut, India

> Sanjaya Mishra Commonwealth of Learning, Canada

#### ABSTRACT

The Commonwealth is home to 2.4 billion people (almost one-third of the world population). The countries of Commonwealth, 54 in number, are spread across Africa, Asia, the Americas, Europe, and the Pacific. The Commonwealth countries are amongst the world's biggest and smallest states in terms of population and size, with about 32 of them having less than 1.5 inillion people. Over the years, the Commonwealth countries have emphasized using distance education and technologies to improve access to quality learning opportunities. In this pursuit, online learning or eLearning has been adapted in many Commonwealth countries by looking into the developments that emerged as various policies, projects, and practices in the four regions of the Commonwealth (i.e., Commonwealth Africa, Commonwealth Asia, Commonwealth Caribbean, and Commonwealth Pacific).

#### BACKGROUND

The Commonwealth is home to 2.4 billion people (almost one-third of the world population). The countries of Commonwealth, 54 in number, are spread across Africa, Asia, the Americas, Europe, and the Pacific. The Commonwealth countries are amongst the world's biggest and smallest countries in terms of population and size, with about 32 of them having less than 1.5 million people. In economic terms, Commonwealth countries include both advanced and developing economies (Commonwealth Secretariat, 2020a). The notable point is that out of 54 countries of the Commonwealth, 44 are low and middle-income countries. Over the years, the Commonwealth countries have emphasized distance education and technologies to improve access to quality learning opportunities. In this pursuit, online

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# Attractor Plot as an Emerging Tool in ECG Signal Processing for Improved Health Informatics

Varun Gupta, Yatender Chaturvedi, Parvin Kumar, Abhas Kanungo & Pankaj Kumar

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# Abstract

Due to involvement of different types of noise, electrocardiogram signal needs robust techniques for its analysis. For that purpose, the theory of chaos analysis is applied as a feature extraction tool on different pathological datasets obtained from different cardiology laboratories. This paper presents the important observations on attractor plots obtained at different time delays. It facilitates the cardiologist in segregating the normal and abnormal subjects on the basis of measured heart rate. Using support vector machine, heart diseases are classified with mean-squared error of 0.023%. Two conditions, viz. normal and abnormal, are considered. The novelty of this paper is to use chaos analysis as an effective feature extraction tool for improving strength of healthcare professionals. The proposed technique shows detection error of 0.077%. The proposed method finds its major applications in regular screening of patient's heart, heart dynamics observation during major heart therapy, etc.



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# Compact Monopole Antenna with Circularly Polarized Band for Biomedical Applications

By Sachin Kumar, Shobhit Saxena, Garima Srivastava, Sandeep Kumar Palaniswamy, Thipparaju Rama Rao, Binod Kumar Kanaujia

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## Design of 4(N+1) Element Dual-CP Massive MIMO Antenna for 5G Systems Operating in Sub-6 GHz Band

Shobhit Saxena, Santanu Dwari Dept. of Electronics Engineering Indian Institute of Technology (ISM) Dhanbad Jharkhand-826004, India

Abstract-A 4(N+1) element dual circularly polarized massive MIMO antenna operating in the Sub-6 GHz frequency band of 3.4-3.8 GHz is presented in this work (where, N=1,2,3,4,5,6,7,.....). A single rectangular-shaped strip of width 'T and length (N(b+10)+b) along with (N+1) 'I' -shaped strips are utilized for getting equal reference voltage level in the ground plane of proposed 4(N+1) element MIMO antenna. In this work, simulated results of the proposed MIMO antenna with 'N=2' are presented. The proposed MIMO antenna designs can be easily extended to design 4(N+1) element massive MIMO antennas by varying 'N.' The proposed MIMO antenna (N=2) achieves a satisfactory isolation level greater than 19.4 dB between ports. The maximum isolation level achieved between ports of the proposed MIMO antenna is around 76 dB. The antenna achieves satisfactory diversity performance in terms of both ECC and isolation.

Index Terms- Isolation, Massive MIMO, Dual-Circularly polarized

#### I. INTRODUCTION

These days there is a growing interest in 5G. The 5G technology will mainly use two frequency bands, namely Sub-6 GHz (below 6 GHz) and millimeter wave (above 24 GHz) [1]. Both the Sub-6 GHz band and mmWave band are going to play an important role in 5G. The Sub-6 GHz band has an advantage of better geographical coverage compared to mm-Wave. On the other hand, lightening-faster speeds can be obtained with mm-Wave compared to Sub-6 GHz. Thus there is a kind of trade-off between the two.

Dual-Circularly polarized (Dual-CP) multiple-input-multipleoutput (MIMO) antennas capable of radiating both lefthanded circularly polarized (LHCP) waves and right-handed circularly polarized (RHCP) waves are in demand these days. In [2], our research group has presented a circularly polarized (CP) single-port antenna having 3-dB axial ratio bandwidth (ARBW) of around 250-270 MHz in the 3.4-3.8 GHz band of interest (Fig. 1(a)). The 3-dB AR band of the unit cell presented in [2] can be easily shifted in the 3.4-3.8 GHz band by varying design parameters  $x_1, x_2, m, m_1, m_2, x_{10}$  and K. The optimized dimensions of the unit cell presented in [2] are (all dimensions in mm) :  $x_3=2.1$ ,  $x_4=5.5$ ,  $x_5=12$ ,  $x_6=20.5$ ,  $x_7=10$ ,  $x_8=3$ ,  $x_9=14$ ,  $x_{11}=1$ ,  $x_{12}=25$ ,  $x_{13}=3.8$  and  $x_{14}=25$ . In [2], the proposed unit cell was utilized in the designing of a fourport MIMO antenna of dimension  $b \times b \text{ mm}^2$  (b=60 mm) (shown in Fig. 1(b)). It is also shown in [2] that the design parameters d, e,f. and g of the metallic 'I' shaped strip used in connecting the MIMO antenna's ground structures can also be varied without affecting the CP characteristics.

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#### Binod K. Kanaujia

School of Computational and Integrative Sciences Jawahar Lal Nehru University (JNU) Delhi New Delhi-110067, India

In this work the dimensions of 'I' shaped strip are (all dimensions in mm): d=e=f=g=0.5.



Fig. 1 Figure showing schematic representation of antennas presented in [2] (a) unit cell (b) four-element MIMO.

This work's primary emphasis is to present a design methodology that can be utilized to design Dual-CP 4(N+1) element massive MIMO antenna having equal reference voltage level in the ground plane for Sub-6 GHz 5G applications (where, N=1,2,3,4,5,6,7,...). The unit cell presented by our research group in [2] is used to design the proposed MIMO antenna.

#### II. ANTENNA DESIGN

In this article, only two cases N=1 and N=2, are presented, but the work can be easily extended to design other 4(N+1)

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# Fundamentals of Automata Theory



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Amit Sharma, A.M.E., B. Tech. (C.S.), M. Tech., Ph.D., Assistant Professor, Department of Computer Science, Sir Chhotu Ram Institute of Eng. and Tech., C.C.S. University, Meerut

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# Basic Principles of CLOUD COMPUTING

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3.4.6 Zoology 9

Chapter 4

# **CURRENT STATUS OF TICK-BORNE DISEASES** IN INDIA

## Sachin Kumar<sup>1,\*</sup>, Anil Kumar Sharma<sup>1</sup>, Gajanan M. Chigure<sup>2</sup>, Ashok K. Chaubev<sup>3</sup> and Srikanta Ghosh<sup>1</sup>

<sup>1</sup>Division of Parasitology, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly (UP), India

<sup>2</sup>Department of Veterinary Parasitology, College of Veterinary and Animal Sciences, MAFSU, Parbhani, (Maharashtra), India

Department of Zoology, Ch. Charan Singh University,

Meerut, (Uttar Pradesh), India

#### ABSTRACT

Ticks and tick borne diseases are a major threat to the livestock and economy of developing countries including India. Ticks, as vectors of several zoonotic diseases, are second only to mosquitoes as vectors. The diseases spread by ticks are a major constraint to animal productivity while causing morbidity and mortality in both animals and humans. Rhipicephalus (Boophilus) microplus and Hyalomma anatolicum have been recognized since long as vectors of importance for transmitting diseases like babesiosis, theilieriosis and CCHF. There is need to recognize the importance of ticks as vectors in-India and devise better methods for their control. This review is focused on the major tick. borne animal and human diseases in India and the current situation in India regarding control of ticks including the development of resistance, progress in tick vaccine and the development of potential phytoacaricides as alternatives to chemical acaricides.

Keywords: ticks, zoonotic diseases, Rhipicephalus (Boophilus) microplus, babesiosis, theilieriosis

\* Corresponding Author's Email: sachin.amroha@gmail.com.

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Chapter 4

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<sup>1</sup>Division of Parasitology, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly (UP), India <sup>2</sup>Department of Veterinary Parasitology, College of Veterinary and Animal Sciences, MAFSU, Parbhani, (Maharashtra), India Department of Zoology, Ch. Charan Singh University, Meerut, (Uttar Pradesh), India

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Keywords: ticks, zoonotic diseases, Rhipicephalus (Boophilus) microplus, babesiosis, theilieriosis

\* Corresponding Author's Email: sachin.amroha@gmail.com.

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# Entomopathogenic Nematodes

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Ashok Kumar Chaubey and Aasha

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#### Abstract

Entomopathogenic nematodes (EPN) are found in all inhabited continents except Antarctica (no report yet) and a range of ecologically diverse habitats, from cultivated fields to deserts. *Steinernema* and *Heterorhabditis* are the well studied

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Omkar (ed.), Microbial Approaches for Insect Pest Management, https://doi.org/10.1007/978-981-16-3595-3\_9

Hazardous Gases Risk Assessment on the Environment and Human Health A 19 M 2021, Pages 11-21 and the second chapter 2 - Arsine: Risk assessment environmental, and health hazard

# 

Arsine is one of the highly toxic forms of arsenic and one of the leading caus of pollution worldwide. The persistent rise of this toxic matter in the atmosphere can create various toxic effects such as hemolysis, loss of block and liver and kidney function disturbance. This chapter discusses findings that define the toxicological and environmental issues encountered postexposure of arsine. Also, the chapter gives an account of studies associate with the progress of risk assessment, as well as management of toxic rules while handling and storing the gas.

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# Keywords

Contraction of the

Stibine, Heinz bodies Hazard analysis critical control points; Good agricultural practices: Chemical weapon



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#### Chapter

# Entomopathogenic Nematodes: Their Characterization, Bio-Control Properties and New Perspectives

Himani Sharma, Aasha Rana, Aashaq H. Bhat and Ashok K. Chaubey

#### Abstract

The insect parasitoid nematodes are a means boon to agronomy and serve as important bio-pesticides for controlling crop damaging insect pests. These nematodes inhabit moist soils and have been to exist in all the continents excluding Polar Regions. These nematodes have 3rd larval stage infective which is the only free living stage existing outside the host. These infective stages are mutually associated with bacteria which reside in their alimentary canal and duo are responsible for mortality of the insect host. These nematodes are currently given great attention by scientific community because of their insect killing properties and can be used to replace hazardous pesticides. These nematodes include various species belonging to genus Heterorhabditis and Steinernema, and members of insectivorous group of genus Oscheius. Before their use as bio-control agents, these nematodes need to be properly identified. Currently, these nematodes are characterized by using morphological and morphometrical parameters and advanced molecular tools including cross hybridization and scanning electron microscope studies. Their associated bacterial partners are studied through advanced molecular and biochemical techniques. The properly characterized nematodes having more entomopathogenic properties can be easily mass produced through in vitro and in vivo methods. They can be formulated in various carrier materials and supplied to farmers for effective control of damaging insect pests. Several countries have formulated various useful products of entomopathogenic nematodes which are available in markets for use by the farmer community and some have given very effective results. India is still at the early stage in the use of these nematodes for bio-control of insects in agronomy. More research in this field needs to be carried, especially in India to produce effective indígenous nematode products which may prove a boon for agriculture.

Keywords: Steinernema, Heterorhabditis, biological control, and pathogenicity

#### 1. Introduction

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#### 1.1 Entomopathogenic nematodes

Entomopathogenic nematodes (EPNs) range in size from 0.3 to 10 mm and they can be more or less cylindrical [1]. In Greek vocables, the term entomopathogenic

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### CHAPTER

## Certain common and interesting coccoid blue-green algae (Cyanobacteria) from India

### \*1Richa Tandon,[⊠] 2Rama Kant, 3Sarika Kesarwani, and 4G.L. Tiwari

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### ABSTRACT

Coccord comobacteria have often been ignored in deniled morphological studies. In Aphanothere a unquemented of perentation by formation of cluster of cells has been reported and distinguished from allied genera. Baaularia is rate and reported for the first time from India and compared with allied genera. Gomphopharia have been studied emically and found to have comparable mages of other species and also the allest genue. Sphoropham. Without a derugnote studied both in nature and disonneolings and found that gpical colonies as observed in partice are never comment in culture. Chousepse is different from Chouseses in having saccare envelope and cells get enlarged before division Astrocepta is specialized genus, growing on exposed tooks and developing omamented covering around individual cell Flowever, in culture condition in growth is highly variable. Chronomacis known to have hemispherical and quadrantal cells after division. However in exponential phase cells look like those of Limnocovers and in manue growth sypical licatures of Connocacous appear. Cyanoarban described for the first time from linding forms dendroid colonies in many and in additions informed servinoid colonies. Chanalardy, is rate genus and represents atmusition between exogete producing and bacocyte producing members of Chamacaphonales. Xenocomputers found to produce non-motile base cytes and distinct from Cythocyths which produces motile bacorvies. Radaria, is a member of Pleurocapsaceae, forms nematoparenchymatous thallus and also produces basecyres in certain conditions. In vegentive stage it can be identified as Cyanodermatium. Pleuwcapse concharam have been studied under culture conditions for young stages with pseudofilamentous nature. Burther it has been shown that under layourable conditions the distinction between binary fission and multiple fission is observed.

Keywords: Bacocyre, Binary fission, Exocyre, Multiple fission, Escudofilamenrous

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Chapter

## Psyllium: A Source of Dietary Fiber

Ranu Agrawal

#### Abstract

Dietary fiber is commonly known as roughage. Fibers are mostly present in vegetables, whole grain, nuts, legumes, and fruits 'I'his is an indigestible part of the food obtained by plants. It includes polysaccharides such as cellulose, hemicellulose, pectic substances, mucilages, gums and lignin as well. Dietary fiber has beneficial physiological effect on health, so it is included in daily diet to decrease occurrence of several diseases. In this sequence, this chapter describes about the dietary fiber, psyllium commonly known as Isabgol which is prepared from the seed of the Plantago ovata Forsk (Psyllium ispaghula). Psyllium is hydrophilic mucilloid, has the capacity to absorb water and increases in volume while absorbing water. Psyllium consists of mixed viscous polysaccharide in which about 35% soluble and 65% insoluble polysaccharides (cellulose, hemicellulose, and lignin) are present. This can be used as gelling, food thickener, emulsifying and stabilizing agents in some food products. Psyllium is a natural biopolymer which has high quantity of hemicelluloses consist of xylan backbone connected with arabinose, galacturonic acid and rhamnose units. Since last many years it is being used as therapeutic agent in several diseases like chronic constipation, inflammation of mucous membrane of GIT tract, duodenal ulcers, piles or diarrohoea etc. It may be source of renewable and biodegradable polymer.

Keywords: Psyllium, hemicellulose, dietary fiber, therapeutic, lignin

### 1. Introduction

1

The term Dietary fiber was coined by Hipsley in 1953 who explained it as a plant cell wall constituent which was indigestible [1]. Later, in 1982, Kay defined the dietary fiber as a plant food component present everywhere and consists of substance having diverse morphological and chemical structure and also cannot be affected by human alimentary tract enzymes [2]. Dietary fiber was also defined by American Association of Cereal Chemists as the edible plant's part or analogue carbohydrate that are not digested or absorbed in the human's small intestine and partially or completely fermented in the large intestine [3]. There are several types of dietary fiber available. They may be soluble or insoluble types, or natural or artificial. Among all dietary fibers, psyllium is one of the important dietary fiber. From last several years it has been focused by various researchers because it contains beneficial pharmaceutical properties.

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