ISSN (Print): 3048-6459

IEARJ

INTERNATIONAL EDUCATIONAL APPLIED RESEARCH JOURNAL

Peer Reviewed International Journal

A Multi-Disciplinary Research Journal

Volume : 01 | Issue : 04 | December 2024

iearjc.com

Editor,
INTERNATIONAL EDUCATIONAL APPLIED RESEARCH JOURNAL
Indore - 452020. (Madhya Pradesh, India)
Email Id : info@iearjc.com | Website : iearjc.com | Contact No : +91-7974455742

INTERNATIONAL EDUCATIONAL APPLIED RESEARCH JOURNAL
PEER REVIEWED JOURNAL- EQUIVENT TO UGC JOURNAL

ISSN (Print) 3048-6459 & ISSN (Online) 2456-6713

Volume: 01 & Issue: 04

Month: December-2024

Starting Year of Publication: 2024

Frequency Year of Publication: Monthly

Format: Print Mode

Subject: Multidisciplinary

Language: Multiple Language (English & Hindi)

Published By:

International Educational applied Research Journal

Publisher's Address:

56, Sarthak vihar, Mirjapur, Indore-452020, and Madhya Pradesh

Printer:

International Educational applied Research Journal

National Editorial Board		
Name	**Designation**	**Affiliation/Address**
Dr. Amit Jain	**Head R&D**	**Veer pharmachemJhagadia Bharuch Gujarat E-mail ID: amit.jain@veerpharmachem.com Conct. No. 7020692540**
Dr. Jimi B. Hadvaid	**Physician**	**Department of Homoeopathic (Enlisted) Physician, Ahmedabad-380001**
Dr. Deepak Saxena	**Director**	**IIPHG Ga dhinager Gujarat Email ID: director@iiphg.org & ddeepak72@iphg.org**

International Editorial Board		
Name	**Designation**	**Affiliation/Address**
Dr. Sukhprit Purewal	**Medical Laboratory Program Instructor**	**1300 Central Parkway West, Suite 400, Mississauge, ON L5C 4G8 CDAANA E-mail ID: s.purewal@oxfordeduca**
Satya Dev Sharma	**Director of Engineering**	**Address: Director of Engineering IVANTI Utah, USA. E-mail ID: Satyadev.sharma@ivanti.com**
Dr. Prabhjot Singh	**Advisor**	**Advisor, Health Surveillance, Disease Prevention and Control Pan American Health Organization/World Health Organization Office for Barbados, Eastern Caribbean Countries and the French Departments E-mail ID singhpra@paho.org**

Publisher		
Name	**Designation**	**Affiliation/Address**
Mitasha Purohit	**Technical Editor**	**Editor Office Indore M.P India**
Editor Office Address		
56, SarthakVihar, Mirjapur, Indore M.P. PIN-452020		
Conct. No.		
+91-7974455742, 91-8980038054 | E-mail Id: info@iearjc.com		

INDEX

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Evaluation of E-learning in Teaching Fungal Infections to First MBBS Students

[1]Sana Talati, [2]Dr.Deependra Sharma

[1, 2]GMERS Medical Collage, Valsad, Gujarat

DOI: https://doi.org/10.5281/zenodo.14537440

Abstract:
The shift towards e-learning in medical education has been accelerated by technological advancements and recent global events, such as the COVID-19 pandemic. This paper evaluates the effectiveness of e-learning methodologies in teaching fungal infections to first-year Bachelor of Medicine, Bachelor of Surgery (MBBS) students. We explore various e-learning tools, assess student engagement and learning outcomes, and provide recommendations for optimizing online education in medical microbiology.

Keyword: COVID-19, year Bachelor of Medicine, Bachelor of Surgery, Online education, Medical microbiology.

1. Introduction:

The study of fungal infections is an essential component of the microbiology curriculum for medical students. Understanding the pathophysiology, diagnosis, and treatment of these infections is critical for future healthcare professionals. Traditional teaching methods have often relied on lectures and textbooks, which may not adequately engage students or cater to diverse learning styles. E-learning presents an opportunity to enhance educational experiences through interactive and adaptive learning environments.

2. Objectives:

The primary objectives of this study are:

1. To evaluate the effectiveness of e-learning in teaching fungal infections.
2. To assess student engagement and satisfaction with digital learning tools.
3. To measure the learning outcomes of students exposed to e-learning compared to traditional teaching methods.

3. Literature Review:

E-learning encompasses a range of digital educational methods, including online lectures, interactive modules, and virtual simulations. Previous studies have shown that e-learning can lead to improved learning outcomes, greater flexibility, and increased accessibility. However,

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

its effectiveness can depend on the quality of the content and the learning platform, as well as the level of interactivity and engagement maintained throughout the course.

4. Methodology:

- **Participants:**

The study involved first-year MBBS students enrolled in a medical microbiology course at a university. A total of 100 students were included, and participation was voluntary.

- **Materials:**

Materials included online lectures, interactive quizzes, virtual microscopy slides, and case studies focusing on common and emerging fungal infections. The content was developed in collaboration with experienced faculty and medical professionals.

- **Evaluation Tools:**

1. **Surveys**: Pre- and post-intervention surveys were conducted to gauge student satisfaction, engagement, and self-reported learning.
2. **Quizzes**: Multiple-choice quizzes were administered before and after the course to assess knowledge acquisition.
3. **Focus Group Discussions**: Qualitative feedback was obtained from students about their e-learning experiences.

5. Results:

- **Student Engagement:**

The survey results indicated a high level of student engagement with e-learning platforms. About 85% of students reported that e-learning was more engaging than traditional lectures. The interactive quizzes and virtual microscopy sessions were particularly well-received.

- **Learning Outcomes:**

The analysis of pre- and post-quiz scores showed a statistically significant improvement in knowledge ($p < 0.05$). On average, students scored 60% in the pre-quiz and 85% in the post-quiz, indicating a gain in understanding of fungal infections.

- **Student Feedback:**

Focus group discussions revealed that students appreciated the flexibility of e-learning and the ability to access resources at their convenience. However, some students expressed concerns regarding the lack of face-to-face interaction and suggested incorporating blended learning approaches to enhance understanding.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

6. Discussion:

The findings of this study suggest that e-learning can effectively teach fungal infections to first MBBS students. Students demonstrated substantial gains in knowledge and found the online format engaging. However, the transition to a fully digital learning environment has its challenges. The lack of in-person interaction can inhibit the development of communication skills and limit opportunities for collaborative learning.

7. Conclusion:

E-learning presents a viable and effective method for teaching fungal infections to first MBBS students, with indicated improvements in knowledge retention and student engagement. As technology continues to evolve, harnessing its potential in medical education will be crucial. Future studies should focus on longitudinal outcomes and the impact of e-learning on clinical practice to ensure that students are equipped with the necessary knowledge and skills to manage fungal infections effectively.

8. References

1. Cook DA, et al. (2010). "Technology-enhanced learning in medical education: a systematic review." Journal of the American Medical Association.
2. Khanna A, et al. (2019). "E-learning in medical education: a review of the literature." Journal of Education and Health Promotion.
3. Sharma S, et al. (2021). "The Role of E-learning in Medical Microbiology Education: Perspectives and Challenges." Medical Microbiology and Immunology.

Citation

1Sana Talati, 2Dr.Deependra Sharma. (2024). Evaluation of E-learning in Teaching Fungal Infections to First MBBS Students. International educational applied research journal, 08(12), 1–5. https://doi.org/10.5281/zenodo.14537440

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

COMPARISON BETWEEN LFT, LIPID PROFILE, CBC WITH MICROSCOPY OF BLOOD CELLS AND SERUM CRP LEVEL IN SMOKERS, TOBACCO CHEWERS AND HEALTHY CONTROL

[1]Sana Talati, [2]Dr.Deependra Sharma

[1, 2]GMERS Medical Collage, Valsad, Gujarat

DOI: https://doi.org/10.5281/zenodo.14537461

Abstrct:

Tobacco consumption, in the form of smoking and chewing, is a prevalent habit globally, with a significant presence in India, particularly among the youth. This habit is associated with increased risk of various pathological conditions, which can be detected through alterations in biochemical parameters.This study are recruit smokers, tobacco chewers, and healthy controls, and their blood samples analyzed for LFT, lipid profile, CBC with microscopy of blood cells, and serum CRP levels.This study aims to provide insights into the alterations of these biochemical parameters in smokers and tobacco chewers, which can serve as early indicators of various diseases. The findings of this study will be useful in identifying the high-risk groups and implementing preventive measures to reduce the burden of tobacco-related diseases.

Keyworld: Tobacco, Lipid profile, CBC, Diseases, CRP Level

1. Introduction:

Tobacco chewing and smoking is a vice that has been practiced by a millions of people in all over the world. It is estimated that among 400 million individuals aged 15yrs and above in India, 47% use tobacco in one or other form[1]. It is compounded by the fact that the rate of tobacco consumption in one or other form is increasing in the youth of the country. Tobacco is the single greatest cause of preventable death globally[2].In smokers and tobacco chewers alteration of relevant biochemical parameters may be indicative of onset of progress of many pathological conditions[2].Therefore we decided to study and compare the liver function test, complete blood count with microscopy of blood cells, serum C- Reactive protein level, and lipid profile of smokers, tobacco chewers and healthy control, So that their level will be used as predictive value in management of tobacco consumers.

2. Objectives:

Aim of the present study and comparison is to find of the effect of tobacco chewing and smoking on liver function test, serum C-RP level, lipid profile and complete blood count and morphology of the blood cells.

3. Material and Methods:

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Proposed research is to be carried out in GMERS Medical college and Hospital, Valsad, Gujarat. The study is to be done in subjects with age group of 20 to 40 years. The subjects will be studied in three groups as (1) Healthy control, (2) Smokers, (3) Tobacco chewers.
The inclusion criteria are that subjects must be having such habit of tobacco consumption as smoking or chewing atleast since 5 years.
Exclusion criteria are those that are unable to understand and follow the verbal instructions; presence of cardiovascular disorders or respiratory disorder or any pathological conditions, or any history of such conditions.
Fasting blood sample is to be collected for the following tests;

3.1 Liver function test includes estimation of (1) Alanine transaminase and Aspartate transaminase both by UV kinetic method[3], (2) Direct and total Bilirubin: by dichloroaniline method[4], (3) Alkaline phosphatase: by pNPP kinetic method[5], (4) Albumin estimation: by bromocresol green method[6].

3.2 Lipid profile include estimation of (1) total cholesterol: by trinder's method[7](2)triglyceride: by GPO – trinder's method[8](3)LDL: by LDL direct reagent[9] (4)HDL: by HDL reagent and (5)VLDL: Friedewald's equation[10] as VLDL = triglyceride/5
Quantitative analysis of all these methods is done by semi auto analyzer machine.

3.3 Complete blood count involves 1. Hb, 2.Total WBC count, 3.differential WBC count, 4.Total RBC count, 5. Platelet count : by automated machine.and 6.Calculation of RBC Indices such as PCV, MCV, MCH, MCHC.
Microscopy involves observing the blood cells under the microscope.

3.4 Serum C-RP estimation is to be done by C-RP slide test [11].

4. Implications:

The study and comparison of effects of tobacco chewing and smoking with healthy control on such parameters as Liver function, Lipid profile, serum C-RP level, Complete Blood Count with Cell morphology has not been done all together. So this study will be helpful in establishing any correlation in these factors if present. Also any alteration in relevant parameter's normal value will be helpful in early diagnosis of any relevant pathological condition.

5. References:

1. This information is been available on http://www.cancerjournal.net/downloadpdf.asp?issn=0973-1482;year2013;volume=9;issue=2;spage=210;epage=214;aulast=Naga;type=2
2. This information is acquired from http://www.biomedres.info/biomedical-research/tobacco-chewing-and-smoking-risk-for-renal-disease.html.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

3. IFCC methods for the measurement of catalytic Concentration of enzymes, J. Clin. Chem. ClinBiochem. (1986) 24:497
4. A) Thomas L ed. Clinical Laboratory Diagnostics. 1st ed. Frankfurt: TH-Books Verlagsgesellschaft, 1998. Pg. 192-202.
B) Tolman KG, Rej R. Liver function. In: Burtis CA, Ashwood ER, editors. Tietz Textbook of Clinical Chemistry. 3rd ed. Philadelphia: W.B Saunders Company; 1999. P. 1125-77.
C) Rand RN, di Pasqua A. A new diazo method for the determination of bilirubin.Clin. Chem. 1962; 6:570-8.
5. Bowers, G.N., McCommb, R.B., (1972) Clin. Chem. 18:97 Recommendations of the German Society for Clinical Chemistry, (1972) Z. Clin. Chem. Bio. 10: 182
6. Sigma Diagnostics product insert (Albumin Procedure No. 631) Bishop M.L., Fody E.P., Schoeff L.E.,(2000), Clinical Chemistry: Principles, Procedures, Correlations (4thed.). Philadelphia, PA: Lippincott Williams & Wilkins.
7. Burtis, C.A., Ashwood, E.R., editors. Tietz Textbook of Clinical Chemistry. 2nd ed. Philadelphia, W.B. Saunders Company, 1994 p. 1003-1008.
8. Burtis, C.A., Ashwood, E.R., editors. Tietz Textbook of Clinical Chemistry. 2nd ed. Philadelphia, W.B. Saunders Company, 1994 p. 1016-1018.
9. Burtis, C.A., Ashwood, E.R., editors. Tietz Textbook of Clinical Chemistry. 2nd ed. Philadelphia, W.B. Saunders Company, 1994 p. 1024-1030.
10. Friedewald WT, Levy RI, Fredrickson DS.Estimation of the concentration of low-density lipoprotein in plasma, without use of the preparative ultracentrifuge. Clinical Chemistry 1972;18: 499-502 (cited in: clinical Chemistry 1990; 36:15-19).
11. (A) R.D Eastham et. al., C-Reactive Protein in Rheumatic Heart Disease, Am. Rheum. Dis. (1958), 17 pg.314-318
(B) Clinical Laboratory by Lothar Thomas, M.D., 1st edition, 1988, TH-Books, Verlagsgesellschaft mbH, Frankfurt, Germany, pg. 700-706.
12. http://www.biomedres.info/biomedical-research/tobacco-chewing-and-smoking-risk-for-renal-diseases.html
13. Bergo MO, Ibrahim MX, Larsson E, Lindahl P, Nilsson JA, and Sayin VI. Antioxidants Accelerate Lung Cancer Progression in Mice. *Sci Transl Med*. 2014.
14. The effect of vitamin E and beta carotene on the incidence of lung cancer and other cancers in male smokers. The Alpha-Tocopherol, Beta Carotene Cancer Prevention Study Group. *N Engl J Med*. 1994.
15. Altern Med Rev. 2002 Oct; 7(5):370-88.
16. Am J Ther. 2007 Mar-Apr; 14(2):189-93.
17. Lehr HA, Kress E, Menger MD et al. Cigarette smoke elicits leukocyte adhesion to endothelium in hamster's inhibition by CuZn-SOD. Free Radic Biol Med 1993; 14: 573-81.
18. Diana J, Pryor W (Eds) Tobacco Smoking and Nutrition: Influence of Nutrition on Tobacco -Associated Health Risks. New York, NY: Ann NY Acad Set, 1993.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

19. Lykkesfeldt J, Loft S, Nielsen JB, Poulsen HE. Ascorbic acid and dehydroascorbic acid as biomarkers of oxidative stress caused by smoking. Am J Clin Nutr 1997; 65: 959-63.
20. Dallongeville J, Marecaux N, Fruchart JC, Amouyel P. Cigarette smoking is associated with unhealthy patterns of nutrient intake: a meta-analysis. J Nutr 1998; 128: 1450-7.
21. Eisench JP, van der Vliet A, Handleman GJ, Halliwell B, Cross CE. Dietary antioxidants and cigarette smoke-induced biomolecular damage: a complex interaction. Am} Clin Nutr 1995; 62 (Suppl 6): 1490S-500S.
22. Steinberg D. Lewis A. Connor memorial lecture. Oxidative modification of LDL and Atherogenesis. Circulation 1997; 95: 1062-71.
23. Pryor W. Cigarette smoke radicals and the role of free radicals in chemical carcinogenicity.Enrviron Health Perspect 1997; 105 (Suppl 4): 875-82.
24. Schwenke DC. Antioxidants and atherogenesis. / Nutr Biochem 1998; 9: 424—45.
25. Lehr HA, Kress E, Menger MD et al. Cigarette smoke elicits leukocyte adhesion to endothelium in hamster's inhibition by CuZn-SOD. Free Radic Biol Med 1993; 14: 573-8.
26. Kallner AB, Hartmann D, Hornig DH. On the requirements of ascorbic acid in man: steady-state turnover and body pool in smokers. Am J Clin Nutr 1981; 34: 1347-55.
27. Lehr HA, Frei B, Arfors KE. Vitamin C prevents cigarette smoke-induced leukocyte aggregation and adhesion to endothelium in vivo. Proc Natl Acad Sci USA 1994; 91: 7688-92.
28. Hunt BJ, Jurd KM. Endothehal cell activation. A central pathophysiological process. BMJ 1998; 316: 1328-9.
29. Cines DB, Pollak ES, Buck CA et al. Endothelial cells in physiology and in the pathophysiology of vascular disorders. Blood 1998; 91: 3527-61.
30. Wolfgang K, Sund M, Frohlich M et al. C-reactive protein, a sensitive marker of inflammation, predicts future risk of coronary heart disease in initially healthy middle-aged men. Circulation 1999; 99: 237^2.
31. Smith FB, Lowe GD, Lee AJ et al. Smoking, hemorheologic factors, and progression of Peripheral arterial disease in patients with claudication. / Vase Surg 1998; 28: 129-35.
32. Dreher D, Junod AF. Role of oxygen free radicals in cancer development. Eur} Cancer 1996;32: 30-8.
33. Inoue M, Osaki T, Noguchi M et al. Lung cancer patients have increased 8-hydroxydeoxy-guanosine levels in peripheral lung tissue DNA. Jpn] Cancer Res 1998; 89: 691-5.
34. Jeremy JY, Mikhailidis DP, Pitti.lo RM. Cigarette smoking and cardiovascular disease. / R SocHealth 1995; 115: 289-95.
35. Morrow JD, Frei B, Longmire AW et al. Increase in circulating products of lipid peroxidation (F-2-isoprostanes) in smokers. Smoking as a cause of oxidative damage. N Engl] Med 1995;332: 1198-203.
36. Pratico D, Barry OP, Lawson JA et al. IPF2a: an index of lipid peroxidation in humans. ProcNatl Aead Sci USA 1998; 95: 3449-54.
37. Miller ER, Appel LJ, Jiang L, Risby TH. Association between cigarette smoking and lipidperoxidation in a controlled feeding study. Circulation 1997; 96: 1097-101.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

38. Pittilo RM, Clarke JM, Harris D et al. Cigarette smoking and platelet adhesion. Br J Haematol1984; 58: 627-32.
39. Hecht SS. Carcinogenic effect of cigarette smoke on the respiratory tract. In: Sipes IG,
40. McGueen CA, Gandolfi AJ (Eds) Comprehensive Toxicology. London: Pergamon, 1997; 437-51.
41. Sekido Y, Fong KM, Minna JD. Progress in understanding the molecular pathogenesis ofhuman lung cancer. Biochim Biophys Ada 1998; 1378: F21-59.
42. Wu X, Shi H, Jiang H et al. Associations between cytochrome P4502EI genotype, mutagen sensitivity, cigarette smoking and susceptibility to lung cancer. Carcinogenesis 1997; 18: 967-73.
43. Soni M, Madurantakan M, Krishnaswamy K. Glutathione S-transferase mu (GST mu) deficiency and DNA adducts in lymphocytes of smokers. Toxicology 1998; 126: 155-62.
44. Yang K, Fang JL, Hemminki K. Abundant lipophilic DNA adducts in human tissues. Mutat Re 1998; 422: 285-95.
45. Johnson GK, Payne JB, Fili JM et al. Development of smokeless tobacco-induced oral mucosal lesions. / Oral Pathol Med 1998; 27: 388-94.
46. Hackshaw AK, Law MR, Wald NJ. The accumulated evidence on lung cancer and environmental tobacco smoke. BMJ 1997; 315: 980-8.
47. Law MR, Morris JK, Wald NJ. Environmental tobacco smoke exposure and ischemic heart disease: an evaluation of the evidence. BMJ 1997; 315: 973-80.
48. Ballinger SW, Bouder TG, Davis GS et al. Mitochondrial genome damage associated with cigarette smoking. Cancer Res 1996; 56: 5692-7.
49. Am Heart J. 2010 Sep; 160(3):458-63. Doi: 10.1016/j.ahj.2010.06.006.
50. Ockene IS, Miller NH. Cigarette smoking, cardiovascular disease, and stroke: a statement for healthcare professionals from the American Heart Association. American Heart Association Task Force on Risk Reduction. Circulation. 1997; 96:3243–3247.
51. Wannamethee SG, Lowe GD, Shaper AG, Rumley A, Lennon L, Whincup PH. Associations between cigarette smoking, pipe/cigar smoking, and smoking cessation, and haemostatic and inflammatory markers for cardiovascular disease. Eur Heart J. 2005; 26:1765–1773.
52. Mizia-Stec K, Zahorska-Markiewicz B, Gasior Z. Cigarette smoking and inflammatory indices in coronary artery disease. Int J Cardiol. 2004; 93:169–174.
53. Bain BJ, Gresham N, Addison G. High neutrophil myeloperoxidase content in smokers. Blood. 1992; 80:845–846.
54. Van der Vaart H, Postma DS, Timens W, ten Hacken NH. Acute effects of cigarette smoke on inflammation and oxidative stress: a review. Thorax. 2004; 59:713–721.
55. Calabro P, Chang DW, and Willerson JT, et al. Release of C - reactive protein in response to inflammatory cytokines by human adipocytes: linking obesity to vascular inflammation. *J Am Coll Cardiol*2005*;* **46:1112**–13.
56. Gupta PC, Warnakulasuriya S. Global epidemiology of areca nut usage. *Addict Biol* 2002*;* **7:77**–83.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

57. Madsen C, Nafstad P, Eikvar L, *et al*. Association between tobaccos smoke exposure and levels of C-reactive protein in the Oslo II Study. *Eur J Epidemiol*2007*;* **22:311**–17.
58. Black S, Kushner I, Samols D. C-reactive protein. J Biol Chem. 2004; 279:48487–90.

Citation

1Sana Talati, 2Dr.Deependra Sharma. (2024). COMPARISON BETWEEN LFT, LIPID PROFILE, CBC WITH MICROSCOPY OF BLOOD CELLS AND SERUM CRP LEVEL IN SMOKERS, TOBACCO CHEWERS AND HEALTHY CONTROL. International educational applied research journal, 08(12), 6–14. https://doi.org/10.5281/zenodo.14537461

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

INFLUENCE OF REGIONAL ENVIRONMENT AND TOURISM ON SOCIAL LIFE OF *LATAGURI* VILLAGE IN JALPAIGURI DISTRICT

[1]Bipul Chakraborty, [2]Dr. Jayati Maiti, [3]Pritam Shil, [4]Sanchita Chakraborty Das

[1]Assistant Professor, Satyendranath Basu D.El.Ed & B.Ed. College, Kalirhat, Itla, West Bengal

[2]Assistant Professor, Department of Education, Swami Vivekananda University, Barrackpur, West Bengal

[3]Student, Dept: of Geography, Krishnagar Government College

[4]Assistant Professor, Global Institute Of Education, Nadia, West Bengal

DOI: https://doi.org/10.5281/zenodo.14537405

Abstract:

Essentially, here we noticed the effect of the tourism industry in financial status in different networks of Lataguri, West Bengal. In there we overviewed numerous things like - financial, traveler and lodging review. Also, we noticed numerous parts of lataguri like-Review region, Objective of review region, Impediment, Information base, Approach, Geography, Environment characterization, Soil, Stream, Alleviation, Financial Profile, Demography, Societal position, Social construction, The travel industry, Effect of the travel industry in financial status, Issue and prospects, and so on. In this topic *"Influence Of Regional Environment And Tourism On Social Life Of* Lataguri *Village In Jalpaiguri District"* influences vacationer locations in both positive and negative ways, enveloping monetary, socio-social, and natural aspects. The customarily depicted spaces of the travel industry influences are monetary, socio-social, and natural. The financial impacts of the travel industry incorporate superior assessment income, individual pay development, upgraded expectations for everyday comforts, and the making of extra work open doors. Sociocultural effects are related with associations between individuals with varying social foundations, perspectives and ways of behaving, and connections to material products.

Key words: ***Regional Environment, Tourism, Social Life,*** **Lataguri** ***Village, Jalpaiguri***

1. Introduction:

The Tourism Industry right now impacts 7.4% to Gross domestic product around the world, 5% to India and 12.4% to West Bengal. Yet, for a couple of years this energy was ended because of a pandemic called Coronavirus. Which is turn influences the whole world and economy. What's more, accordingly, all influencing factors were impacted however the 'Travel Industry' has totally imploded and this misfortune is unsalvageable. The entire world experiences because of "Coronavirus", India is no less impacted. As of now, India and different

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

nations of the world have steadily beaten this shock and moved towards progress. However, critically, in spite of this, in somewhere around couple of days 'The travel Industry' has gotten back to its old spot rapidly. Thus, the equilibrium in India's Gross domestic product has progressively expanded. We are occupants of West Bengal. The travel industry in West Bengal is mostly founded on the northern slopes. Individuals' psyches are truly upset by its unprecedented magnificence and furthermore upset to outwardly see the value in that excellence and to know about the social and financial issues there. Along these lines, for that we chose to visit there, at Lataguri, Mal sub-division, Jalpaiguri. Which region is especially founded on The travel industry.

2. Background of the study:

Work of setting out new position open doors inside a given economy or society. The travel industry offers administrations, for example, touring and convenience and food administrations, drinking spots and eateries to sightseers. Consequently, it is a region area action. In our review region it is vigorously influence on the respondents. The lodgings of lataguri are a lot of influenced structure the travel industry. Step by step the travel industry is creating itself in our review region. Every one of the inns are especially great. All the fundamental things are import there for sightseers. In our review region, the travel industry is the primary business which spreading the turn of events. And furthermore, it is exceptionally palatable for their kin. For that their (inns) administration is developing gradually a direct result

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

of "Coronavirus" pandemic. Just for the pandemic all the advancement of ventures are halted. Be that as it may, all circumstance is at this moment. Also, the development is begun. The travel industry isn't moved without vacationer. At the point when the idea of the travel industry came in 1982, a large number individuals were not grasp it. Yet, relaxing grasped us about it. The travel industry has many effects in vacationers like positive and negative. The travel industry changes the existence of many individuals and change the many perspectives.

Database & Methodology:

Both of primary and secondary data have been used in this study area to explore the impact of tourism in socio-economic status in various communities. Primary data source is from questionary survey sheet and tabulation sheet and secondary data source is from satellite image (USGS and ESRI) etc. In our survey work simple methodology has been adapted to explore, impact of tourism in socio-economic status in various communities of Lataguri like PIE graph, BAR graphs, HISTOGRAM, Line graphs etc. These graphs have been used to show education structure, literacy rate, male and female population ratio, dependent ratio and in-dependent ratio etc. And also, the Microsoft WORD & EXCEL has been used for route map and location map.

Research objectives:

1. To know the relation between Regional Environment and Social Life of Lataguri Village in Jalpaiguri District.
2. To know the impact of Tourism on Social Life of Lataguri Village in Jalpaiguri District.

Research questions:

1. What is the relation between Regional Environment and Social Life of Lataguri Village in Jalpaiguri District ?
2. What is the impact of Tourism on Social Life of Lataguri Village in Jalpaiguri District ?

Analysis and Interpretation of Study:

Physical Background of Study Area:

As per field survey I observed that the geographically point of view, the region belongs to the Himalayan foot hill region. There are slight ups and down. Some are low and inundated by rivers during the monsoon period: others are slightly higher and remain always above the water even the rivers are in flood.

Geology:

As per reported on Jalpaiguri District census hard work, Geologically the district is dominated by schist, gneiss, phyllites, quartzite, dolomite and cad. The northern part of the district

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

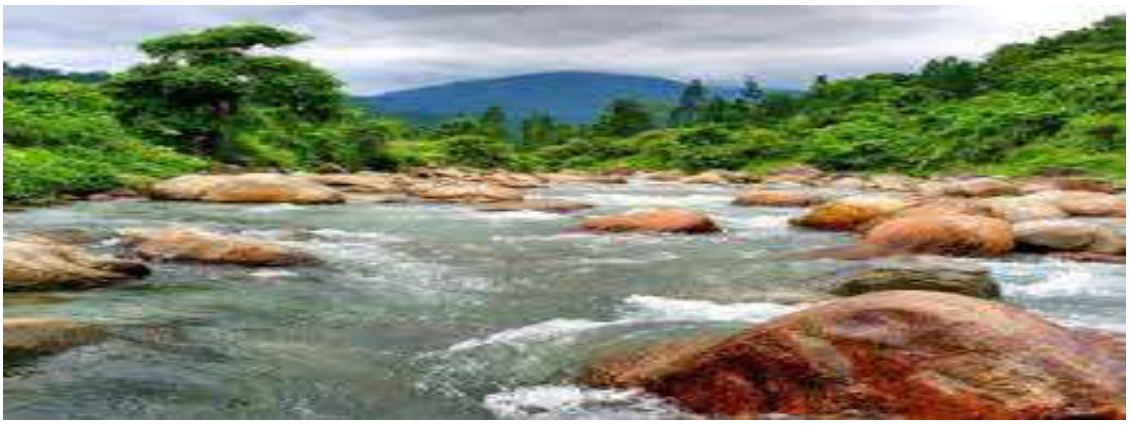
experienced an extensive growth of alluvial femes. Block clay exists between the area of TISTA and JAL DHAKA rivers. The upper part of Jalpaiguri district comprises of thick boulders part of boudins and conglomerates where in lower part of the district there is a formation of terrace created by the fluvial activity of the rivers. "With the exception of the hilly northern fringe, the whole at the district is covered by alluvial deposits. The alluvium consists of coarse gravels near the hills and the presence at sandy clay and sandy loan fun Thun." (Census,1961). The tectonic activity is the most crucial factor in developing the elevations and has an important effect on erosion and depositional aspects and the drainage networks of Jalpaiguri district.

Relief:

As per the report of Bagchi & Mukherjee, 1983. The relief character of Mal Subdivision is undulating to even plain. There are all plains of the base of Himalaya and is bounded in the north and south by 300 meters and 66 meters can't our lines respectively. Between the Neora and Murti River, there is a row of small mounds are considered to have been initially a narrow strip of up heaven zone which was disintegrated by stream dissection into small mound rising 60-90 meters above surrounding surfaced to the south and 30-60 meter to the north.

Drainage and Waterbodys:

As per district census handbook majority of the rivers flowing in Jalpaiguri district originates in the northern hills and the river flows from the north towards the south easterly direction among which Tista, Jal Dhaka, Kanotoya, Diana, Murti and Neora are not worthy. Jalpaiguri district is the inter flows of rivers are rivulets. Because foot hill rivers that flow the hilly courses abruptly reaches the plain. The rivers after reaching the plains are braided and therefore the river is incapable of transporting their bed load, hence, the river beds are raised resulting into floods during heavy monsoons rains in few pants of the plains. However, changing of the river course and shifting of river are the common features in this region. Flooding, bank erosion agriculture, forest, tea-garden and settlement.



Climate:

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

As per district census handbook the principal character of the climate of Jalpaiguri district is offensive heat, high humidity and heavy precipitation. The district expressive hot season from the months of march, though even in these months there are some rainfalls. They are the part of the cold season, duration of which is mid-November to the end of February.

Soil: -

As per district census handbook soil is a great natural resource which by means of climate factors creates soil of Jalpaiguri district is its coarse texture, low water retaining capacity along with weak context at organic matter. The soils of the northern part of Jalpaiguri district are acidic in reaction with less amount of organic carbon where the soil pH increases southwards with its finest texture. The soils of river adjunct area have pH value between 5.0 to 6.5 medium quality of phosphate, higher quality in case at N2 and medium quality of organic carbon 0.5% - 0.75% (Biswar,2013).

Natural Vegetation:

The forest of Jalpaiguri district has mainly extended from plains from plaints to Terai regions of Himalaya and is located in the flood plains of different main hill rivers and other medium and small rivers and rivulet which have created a pocket of grass land. A part from national parks and sanctuaries a significant area of this district is covered by forest. The forests of this district are predominantly Sal with pockets of various other types Evergreen Forest, savanna, Riverine Forest and swamps. Jalpaiguri is one of the richest among the districts of west Bengal stoking term of forest resources. A major part of Jalpaiguri district is covered by forest ever today this area remains one of the most prominent wildlife areas of the country and bears the beat Sal forest in India. The major forest cover comprises of semi-moist –deciduous vegetation. Apart from these high-rise forests there are floodplains covered with grass lands which nourishes wide spectrum wildlife.

Cultural Status:

Lataguri celebrates different types of cultural festivals such as Durga Puja, Kali Puja, Teesta Burir Puja, Manosha Puja and different fairs. Chor Chunni and Dham Gaan are most popular folk arts in this hilly region, which exhibits the rise and fall of various mythological characters. As per field survey, we found that Lataguri is a remote village, the light of education did not reach there. For that the education rate is very much low. I found that 79.25% people are literate and 20.75% people are illiterate. And male literate is 58.10% and female literate is 41.90%, male illiterate is 32.73% and female illiterate is 67.27%. And also, we observed that “literate without level” male is 24.09% and female is 39.84%, “primary level” male is 12.41% and female is 7.81%, “upper primary” male is 24.82% and female is 19.53%, “high” males is 18.98% and female is 11.72%, “higher” is 12.41% and female is 15.63%, “under graduate” male is 5.84% and female is 3.91%, “post graduate” male is 0.73% and female is 1.56%, “others” male is 0.73% and female is 0%. Literacy rate = {total number of literate person / (total person – [0-6] year people)} x 100 = {120 / (265-13)} x 100 = 83.33% Here, we also see the literacy rate of lataguri is 83.33%.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Economic Status: -

As per field survey, it is observed that the economic status of this area is agriculture based. But here we had saw others jobs like driving and business take a big place of economy. And also, a big factor is "**Tea Industry**", which heavily effects on economy. But which takes a very important place in the economy, is "**Tourism**". It is a very fantastic place for traveling. Many of the people of south Bengal, south-east India come there to visit the beauty of nature. For that the people of lataguri, developed the place as a tourist place. There were many lodges for tourists, many outstanding places are there for tourists, which directly impacts in the economy. Beside of this many small-scale industries and cottage industries in the lataguri area. We observed that through this type of work and also many types of occupation there are contain level of income.

Income Level:

Through our survey It is observed that there are various types of yearly income level (below 40000) there are 13.33% people, lower (40000-80000) there are 21.67%, moderate (80000-300000) there are 46.67% and high (>300000) there are 18.33% people.

Occupational Status:

As per field survey, there are many types of occupied people live in lataguri. It observed that 15.85% of people were agricultural labour, 5.28% of people were driver, 1.13% of people were government job, 0.75% of people were teacher, 0.38% of people were stitching, 3.40% of people were tourism, 3.80% of people were service man, 6.04% of people were business man, 1.13% of people were salesman, 0.75% of people were car painter, 1.13% of people were police, 19.62% of people were students, 29.07% of people were house wife, 3.02% of people were working in other places and 8.68% of people were dependent.

Tourism and its Impact on Socio Economic Status of Lataguri, West Bengal:

It is observed in our survey report that, in lataguri where many ups and downs in the hilly region; difference of height calculate the expenditure of tourists. First of all, only for tourism industry we are observing the beauty of the nature. But the cost is being high to higher in the hilly region. And also, the travelling cost, foods, water etc essential thing price are very high. For the relative relief when we travel plane from hills, we observed many beautiful places, many side seen, etc. The places in lataguri to observed are 'Neora River', 'Gorumara National Park', 'Chapramari Wild Life Sanctuary', 'Murti River', 'Jayanti Mahakal caves', 'Jal Dhaka', 'Jalbong', 'Bindu' and 'Buxa Tiger Reserve' etc. which are very famous, here the tourism gave its impact. Only for the tourism industry, all of the places are in under development.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Tourism industry has a big impact on river. Tourism is also one of the main causes of water pollution. For that all rivers, ponds and wells are full of plastic and the aquatic animals are dying for the plastics. When the tourists were throwing plastic anywhere, they will flow with the rain water and from drains; which will pollute the main rivers. But in our study area there were a big is stealing sands from NEORA river and build many buildings for hotel. This is the main problem of river bank erosion. But in there I observed a new technic of crossing rivers. It was a new type of 'vela'. Tourism change the climate of many tourist places. When some of the intelligent people create a tourist place for his income, he/she couldn't about their environmental aspects. For that he/she cuts trees, making houses, generating power, manufacturing goods, using transportation, producing foods, powering building and consuming too much etc. As a result, the temperature of that place is quickly high and the rainfall becoming low to lower of the places. Like that the study area's climate is changing slowly. Tourism heavily impacts on soil as well. It is a cause of soil pollution. Because all of the tourists when come to the tourist area they throw their plastic bag, chips packet, foods anywhere anytime. But after that when the times spends into its own way, the plastic will not be mixing up with the soil. Also, a point I recall that when human binges destroy the forests then the land slide and the bank erosion occur into a diester for us. It is observed it from the recipients of our study area. In this case I recall a thing, the people of lataguri, made a damn with rocks and iron net.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Personally, It is thought that the demographic structure of all tourist area is affected for tourism. Because of having a tourist place, many of the people were gathering here for the source of income. And also, they were pretending the place for live. For that their population is growing up to high. In our study area, observed that most of the people are dependent. Because the old generation who create the tourist place are becoming older. And the percentage of new born baby is quite impressive. And the independent people are moderate in population. But there many of the pupils were gathering there only for the income purpose. And also, I observed that 17% families are migrated from other state. After having the study of the survey report I thought the demography of Lataguri is moderately affected form tourism. And also, it occurs in present time. Which was a good sign of development. Most probably the houses are not affected so much. But the hotels are heavily affected for tourism. There are many 'house holding type' in lataguri. Many types of houses are in there. But mostly the minimum people have small land and many houses are 'kachha' and some are 'packka'. Most probably in our survey, 1-5 katha house hold are 63.33%. There main culture of the houses is all the pillars are looked like a cut of tree. But in there which hotels are situated, they are very much expensive and deluxe also.

Marital status is also secondary impactful thing of tourism. 49.71% male and 50.29% female are married. Some of the males have two wives. For that the difference is un- equilibrium. But we observed that many of the married people are works in tourist hotel. Which influence the tourism. And only for tourism they have profited and the flow of their life is becoming good. Only for the grow of the tourism industry many different religions people were gathered in the tourism area, only for growing up their income level. We observed by our field report that Hindu is 56.67%, Muslim is 10%, Sikh is 8.33%, Janis is 6.67%, Buddhist is 5%, Christ is 6.67% and others is also 6.67%. Here we saw many of different religious people who migrated from others states also for business or income faculty. And also, we observed many sub

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

religions (communities), like - Raj Bangshi is 31.67%, Mech is 13.33%, Oraons is 10%, Mahali is 6.67%, Lohara is 6.67%, Lepcha is 6.67%, Kharia is 5%, Mundas is 13.33% and last of all Bengali is 6.67%. From our survey report I think in lataguri many of different community people were lived together and manage the tourism and also the agricultural field. As per field survey, I observed that different type of social groups can be turned as the base of social structure. There was General caste in 21.67%, SC is 45%, ST is 18.33%, OBC- A is 5% and OBC-B is 10%. Here, we see the SC caste is grab the half amount of caste structure. In many cities all caste is neglect once another. But here we see all caste of people are living beside among each other's and also, they have a good relation among themselves. Because of tourism, all caste of people works together in various tourist places. Commodification of social status is demonstration effect, community participation, acculturation, positive & negative socio-economic culture impacts etc.

Education creates the development. It helps people for many new ideas and new plans for work. I found in our study area that 79.25% people are literate and 20.75% people are illiterate. And male literate is 58.10% and female literate is 41.90%, male illiterate is 32.73% and female illiterate is 67.27%. If all people get educate then they will develop the tourism industry, because it is the main source of income. Many of the adult and old people were not so much educated. But the new generation is heavily interested in education. And I think, in future they will get more educated and more develop their region. They will grow in future. They are hopeful. Tourism is a main influencing factor of economy. Economic condition of a place is indicating the development. In our study area we observed that the economic status of there is moderately based on tourism. Many of the people of there, works in the hotels and also work in agricultural field. Only for the cold season all tourists visit there any time. And they have much income from there. The economic effects of tourism encompass improved tax revenue, personal incoming growth, enhance living standards and the creation of additional employment opportunities. One of the biggest benefits of tourism is the ability to make money through foreign exchange earnings. An increase in tourism activity leads to economic growth via foreign exchange gains, the creation of new tourism-related business opportunities and an increase in tax revenues.

These findings may suggest that countries with higher tourist arrivals have a more equitable income distribution. Tourism provides the economic stimulus to allow for diversification of employment and income potential, and develop resources within the community. Improvements in infrastructure and services can benefit both the locals and the tourists. I observed it from our study area. Tourism creates diversified employment opportunities in different sectors like accommodation, food beverage establishments, transportation services, travel agencies, tour operation companies, natural and cultural attraction sites.

Conclusion:

Basically, here we observed the impact of tourism in socio-economic status in various communities of Lataguri, West Bengal. In there we surveyed many things like – socio-economic, tourist and hotel survey. And we observed many aspects of lataguri like- Study area,

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Objective of study area, Limitation, Data base, Methodology, Geology, Climate classification, Soil, River, Relief, Economic Profile, Demography, Social status, Cultural structure, Tourism, Impact of tourism in socio-economic status, Problem and prospects, etc. Tourism impacts tourist destinations in both positive and negative ways, encompassing economic, socio-cultural, and environmental dimensions. The traditionally-described domains of tourism impacts are economic, socio-cultural, and environmental. The economic effects of tourism encompass improved tax revenue, personal income growth, enhanced living standards, and the creation of additional employment opportunities. Sociocultural impacts are associated with interactions between people with differing cultural backgrounds, attitudes and behaviours, and relationships to material goods. Environmental impacts can be categorized as direct effects including degradation of habitat, vegetation, air quality, bodies of water, the water table, wildlife, and changes in natural phenomena, and indirect effects, such as increased harvesting of natural resources to supply food, indirect air and water pollution (including from flights, transport and the manufacture of food and souvenirs for tourists).

Tourism also has positive and negative health outcomes for local people. The short- term negative impacts of tourism on residents' health are related to the density of tourist's arrivals, the risk of disease transmission, road accidents, higher crime levels, as well as traffic congestion, crowding, and other stressful factors. In addition, residents can experience anxiety and depression related to their risk perceptions about mortality rates, food insecurity, contact with infected tourists, etc., which can result in negative mental health outcomes. At the same time, there are positive long- term impacts of tourism on residents' health and well-being outcomes through improving healthcare access positive emotions, novelty, and social interactions. In the conclusion, the field of survey has explained the social economic status of the area and it is quite clear that the area has halt probably is might development of worker on this area. They have a bright future ahead if the problems are solved. Tourism of the lataguri has been able to develop their areas with the introduction of tourism and is moving towards sustainable development. On the other hand, it gives the job opportunity of local people and enhanced their daily life style. Local people have more aware to conserve their environment. Lastly, it has brought social, culture and economic change of the study area.

References:

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

1. "Environmental Issues". West Bengal Human Development Report 2004 (PDF). Development and Planning Department, Government of West Bengal. May 2004. pp. 180–182. ISBN 81-7955-030-3. Archived (PDF) from the original on 1 May 2013. Retrieved 5 March 2012.
2. "Forest and tree resources in states and union territories: West Bengal" (PDF). India state of forest report 2009. Forest Survey of India, Ministry of Environment & Forests, Government of India. pp. 163–166. Archived from the original (PDF) on 1 May 2013. Retrieved 4 March 2012.
3. "Forest cover" (PDF). India state of forest report 2009. Forest Survey of India, Ministry of Environment & Forests, Government of India. pp. 14–24. Archived (PDF) from the original on 1 May 2013. Retrieved 4 March 2012.
4. "Natural vegetation". West Bengal. Suni System (P) Ltd. Archived from the original on 23 May 2006. Retrieved 31 October 2006.
5. "Problems of Specific Regions". West Bengal Human Development Report 2004 (PDF). Development and Planning Department, Government of West Bengal. May 2004. pp. 200–203. ISBN 81-7955-030-3. Archived (PDF) from the original on 1 May 2013. Retrieved 5 March 2012.
6. "Sea beaches in West Bengal". Government of West Bengal. Archived from the original on 3 July 2012. Retrieved 24 November 2012.
7. "Seven wonders of Kolkata". The Times of India. Archived from the original on 11 February 2012. Retrieved 27 May 2012.
8. "Sundarbans National Park". World heritage list. UNESCO World Heritage Center. Archived from the original on 6 March 2012. Retrieved 4 March 2012.
9. "The Bauls of Bengal". Folk Music. BengalOnline. Archived from the original on 19 January 2003. Retrieved 26 October 2006.
10. "West Bengal: General Information". India in Business. Federation of Indian Chambers of Commerce and Industry. Archived from the original on 19 August 2006. Retrieved 25 August 2006.
11. Ashish Basu (1990). Handicrafts of W. Bengal: a retrospect. p. 51. Retrieved 24 November 2012.
12. Awasthi, Shambhu Ratan; Pandey, Shiv Vishal (24 March 2021). Renewable Energy from Small & Micro Hydro Projects: Practical Aspects and Case Studies. TERI: The Energy and Resources Institute. pp. 25–26. ISBN 978-93-8653-092-9.
13. Bengal, Sarees. "Sarees of Bengal". sareesofbengal.com. Archived from the original on 21 February 2018. Retrieved 20 February 2018.
14. Bernbaum, Edwin (2022). Sacred Mountains of the World (2nd ed.). Cambridge University Press. ISBN 978-1-108-83474-2.
15. Besky, Sarah (2014). The Darjeeling Distinction: Labor and Justic on Fair-Trade Tea Plantations in India. California Studies in Food and Culture Series. University of California Press. ISBN 978-0-520-27738-0.
16. Besky, Sarah (2020). Tasting Qualities: The Past and Future of Tea. University of California Press. ISBN 978-0-520-30324-9. LCCN 2019042808.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

17. Bhattacharya, Nandini (2022). "Imperial Sanctuaries: The hill stations of colonial South Asia". In Fischer-Tiné, Harald; Framke, Maria (eds.). Routledge Handbook of the History of Colonialism in South Asia. Routledge. doi:10.4324/9780429431012-26. ISBN 978-1-138-36484-4. S2CID 238650973.
18. Booth, Chelsea (2009). ""An Ocean of Culture": Language Ideologies and the Social Life of Language in Multilingual Darjeeling, India". Proceedings of the Seventeenth Annual Symposium About Language and Society, Austin, April 10–11, 2009. Vol. 53. Texas Linguistics Forum. pp. 8–17.
19. Bradnock, Robert W (2016). The Routledge Atlas of South Asian Affairs. Cartography by Catherine Lawrence. Routledge. p. 73. ISBN 978-0-415-54512-9. India's first hydro-power plant, located near Darjiling (Darjeeling), started production in 1897.
20. Chakraborty, Ajanta (5 July 2011). "Meet the new Mamata Banerjee". The Times of India. Archived from the original on 8 July 2012. Retrieved 23 January 2012. The jatra industry based out of Kolkata's Chitpur Road has gone through a severe blow with the growth of video parlours.
21. Chettri, Mona (2018). "The Rowdies of Darjeeling". In Middleton, Townsend; Shneiderman, Sara (eds.). Darjeeling Reconsidered: Histories, Politics, Environments. Oxford University Press. pp. 135–153. doi:10.1093/oso/9780199483556.003.0007. ISBN 978-0-19-948355-6.
22. Chhetri, Bishal; Lepcha, Kabita (2021). "Spatial Analysis of the Intra-urban Quality of Life: A Study in the Darjeeling Town in India". In Singh, R. B.; Chatterjee, Soumenda; Mishra, Mukunda; de Lucena, Andrews Jose (eds.). Practices in Regional Science and Sustainable Regional Development: Experiences from the Global South. Springer. pp. 317–338. doi:10.1007/978-981-16-2221-2. ISBN 978-981-16-2220-5. S2CID 240497482.
23. De Bruyn, Pippa; Bain, Keith; Venkatraman, Nilofer; Joshi, Shonar (2008). Frommer's India. Frommer's. ISBN 978-0-470-16908-7. Archived from the original on 25 September 2021. Retrieved 2 October 2020.
24. Drew, Georgina; Rai, Roshan P. (2018). "Connection amidst Disconnection: Water Struggles, Social Structures, and Geographies of Exclusion in Darjeeling". In Middleton, Townsend; Shneiderman, Sara (eds.). Darjeeling Reconsidered: Histories, Politics, Environments. Oxford University Press. pp. 220–239. doi:10.1093/oso/9780199483556.003.0011. ISBN 978-0-19-948355-6.
25. Dutta, Neelanjan; Ghosh, Anaya; Debnath, Biswajit; Ghosh, Sadhan Kumar (2020). "Climate Change in Hilly Regions of India: Issues and Challenges in Waste Management". In Ghosh, Sadhan Kumar (ed.). Sustainable Waste Management: Policies and Case Studies, 7th IcoSWM–ISWMAW 2017, Volume 1. Springer. pp. 657–670 [661–662]. ISBN 978-981-13-7070-0. Archived from the original on 15 August 2022. Retrieved 30 July 2022.
26. Gellner, David N. (2014). "Warriors, Workers, Traders and Peasants: The Nepali/Gorkhali diaspora since the nineteenth century". In Chatterji, Joya; Washbrook, David (eds.). Routledge Handbook of the South Asian Diaspora. London and New York: Routledge. pp. 136–150. doi:10.4324/9780203796528-14. ISBN 978-0-415-48010-9.
27. Georg, Feuerstein (2002). The Yoga Tradition. Motilal Banarsidass. p. 600. ISBN 3-

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

935001-06-1.

28. Gerrard, John (1990). Mountain environments: an examination of the physical geography of mountains. MIT Press. ISBN 978-0-262-07128-4. OCLC 20637538.
29. Gervais, Daniel J.; Slider, Matthew (2017). "The Geneva Act of the Lisbon Agreement: Controversial Negotiations and Controversial Results". In Caenegem, William van; Cleary, Jan (eds.). The Importance of Place: Geographical Indications as a Tool for Local and Regional Development. Ius Gentium: Comparative Perspectives on Law and Justice 58. Springer International Publishing AG. pp. 15–46. doi:10.1007/978-3-319-53073-4. ISBN 978-3-319-53072-7.
30. Islam, Sadiq (29 June 2001). "World's largest mangrove forest under threat". CNN. Archived from the original on 22 August 2007. Retrieved 31 October 2006.
31. Mukherji, S.J. (2000). College Botany Vol. III: (chapter on Phytogeography). Calcutta: New Central Book Agency. pp. 345–365.
32. Niyogi, Subhro (26 October 2010). "Red alert For Jatra". The Times of India. Archived from the original on 7 July 2012. Retrieved 23 January 2012.
33. Sarkar, Suvobrata (2020). Let there be Light: Engineering, Enreprenaurship and Electricity in Colonial Bengal, 1880–1945. Cambridge University Press. pp. 121–122. ISBN 978-1-108-83598-5.

Citation

1Bipul Chakraborty, 2Dr. Jayati Maiti, 3Pritam Shil, 4Sanchita Chakraborty Das. (2024). INFLUENCE OF REGIONAL ENVIRONMENT AND TOURISM ON SOCIAL LIFE OF LATAGURI VILLAGE IN JALPAIGURI DISTRICT. International educational applied research journal, 08(12), 15–33. https://doi.org/10.5281/zenodo.14537405

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

1857 की क्रांति में जनपद जालौन
(ताई बाई का योगदान)

रचना पाल

शोधार्थी, इतिहास अध्ययनशाला, जीवाजी विश्वविद्यालय, ग्वालियर

DOI: https://doi.org/10.5281/zenodo.14587487

सारांश :

अंग्रेजों के खिलाफ 1857 में उठी बगावत की चिंगारी में वीरांगना रानी लक्ष्मीबाई के साथ मिलकर अंग्रेजों को धूल चटाने वाली जालौन जिले की पहली महिला स्वतंत्रता संग्राम सेनानी और अंतिम शासिका महारानी ताईबाई। 1857 की क्रांति को भला कौन भूल सकता है? इस आजादी की जंग में न जाने हमारे कितने क्रांतिवीरों और वीरांगनाओं ने अपने प्राणों की आहुति दी है। ऐसी ही एक वीरांगना इतिहास के पन्नों में दर्ज है, जिसे महारानी ताईबाई के नाम से जाना जाता है। महारानी ताईबाई जालौन की प्रथम महिला स्वतन्त्रता संग्राम सेनानी और जालौन राज्य की अंतिम शासिका के तौर पर जानी जाती हैं।

महारानी ताईबाई का नाता वीरांगना रानी लक्ष्मीबाई से रहा है और वह रानी लक्ष्मीबाई के साथ 1857 की क्रांति में अंग्रेजों के विरोध में कूद पड़ी थीं। अंग्रेजों को उन्होंने खदेड़ दिया था, जिसके बाद 1858 में पूरा जालौन जिला महारानी ताईबाई के अधिकार में आ गया। जालौन नगर के मध्य में स्थित प्राचीन तहसील भवन मराठा राजवंश की शासिका ताईबाई का महल है, जहां वह निवास करती थीं। प्राचीन तहसील भवन ताईबाई की शौर्य गाथा की याद दिलाता है और स्वतंत्रता आंदोलन में उनके योगदान की निशानी है।

ताईबाई ने तात्या टोपे के साथ मिलकर लड़ाई लड़ी थी। कानपुर की लड़ाई में तात्या टोपे के पराजित होकर लौट आने के बाद भी ताईबाई ने हिम्मत नहीं हारी थी। उन्होंने आभूषण बेचकर सेना तैयार की और नई सेना के द्वारा तात्या टोपे के साथ चरखारी पर आक्रमण कर उसे जीत लिया। इसके बाद ताईबाई ने जालौन, कनार, कालपी, आटा, उरई, महोम्मदाबाद, कोटरा, और कोंच इलाके में अंग्रेजों का कोई नामोनिशान नहीं रहने दिया।

अंग्रेजों का नरसंहार रोकने के लिए उन्होंने आत्मसमपर्ण महारानी ताईबाई का शासन अंग्रेजों को रास नहीं आ रहा था। तभी अंग्रेजों ने नई कूटनीति का इस्तेमाल करते हुए उनके सहयोगियों को मिटाना शुरू कर दिया। इसके लिए उन्होंने युद्ध का नहीं बल्कि नरसंहार का सहारा लिया। तब अंग्रेजों ने एक दर्जन से अधिक क्रान्तिकारियों को खुलेआम पेड़ से लटका दिया गया और इस तरह से अंग्रेजों का नरसंहार जारी रहा। फिर अंत में लाईबाई ने नरसंहार रोकने के लिए मई 1858 को अपने पति और पुत्र के साथ जाकर आत्मसमर्पण कर दिया।

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

अंग्रेजों ने उनकी समस्त सम्पत्ति जब्त कर ली। अंग्रेजों ने राजद्रोह और विद्रोह का आरोप लगाकर उन्हें और उनके सहयोगियों को आजीवन कारावास की सजा सुना दी।

जिले में मराठा शासन से जुड़े कई स्थल हैं। हालांकि जालौन उनमें मुख्य इसलिए है चूंकि यहीं पर नाना साहब रहे और बाद में ताईबाई का शासन रहा। नाना साहब गढ़ी पर बने किले में रहते थे जबकि ताई बाई रानी महल में। 1857 से प्रथम स्वाधीनता संग्राम में अंग्रेजों का डटकर रानी ताई बाई ने सामना किया था। तात्या टोपे के साथ मिलकर उन्होंने अंग्रेजों को पस्त किया। इसके बाद भी कहीं से मदद न मिलने के बाद भी वह अंग्रेजों का डटकर सामना करती रहीं। हालांकि बाद में हुए घटनाक्रम के कारण उन्होंने अपनी प्रजा की रक्षा हेतु आत्मसमर्पण कर दिया था। लाई बाई के कौशल का ही परिणाम था कि अंग्रेजों ने बाद में उनकी विरासत के रूप में रहे किले को तुड़वा दिया था। हालांकि उनका महल आजादी के बाद भी सुरक्षित रहा। लेकिन अंग्रेजी शासन के बाद सत्ता में आई सरकारों ने भी उनके महल को संरक्षित करने की क्रांति दिशा में कोई कदम नहीं उठाया।

गांधीवादी विचारक राधेश्याम योगी का कहना है कि ऐसी ऐतिहासिक विरासत को संरक्षित करने की जरूरत है। जो देशप्रेम के लिए लोगों को प्रेरित करती है। जिससे लोग इसके बारे में जानने को उत्सुक रहते हैं।

सन् 1857 की क्रान्ति में सभी अपनी क्षमता से अधिक आवृत्ति देने की तत्परता दिखा रहे थे। उत्तर प्रदेश का जनपद जालौन भी किसी दृष्टि से इस संघर्ष में पीछे नहीं रहा। छोटे-छोटे संघर्ष के अतिरिक्त सन् 1857 में जनपद जालौन क्रान्तिकारियों की कर्मभूमि बन कर उभरा, यहां तक कि क्रान्ति की समस्त गतिविधियां बुन्देलखण्ड में अलग-अलग संचालित न होकर एकजुट रूप में कालपी से संचालित होने लगीं। नाना साहब, तात्या तोपे, रानी लक्ष्मीबाई, कुंवर साहब आदि की रणनीति यहीं पर बनती और क्रियान्वित होने लगती। इन सबसे अलग जनपद जालौन का नाम इस बिन्दु पर आकर ज्यादा आभासित प्रतीत होता है कि इन सभी प्रसिद्ध नामों से बहुत पूर्व जनपद की पहली महिला क्रान्तिकारी ताई बाई ने इस आन्दोलन में सक्रियता दिखा कर क्षेत्र के क्रान्तिकारियों के मध्य एक अलख जगा दी थी। यह जनपद जालौन का दुर्भाग्य ही कहा जायेगा कि इस क्षेत्र के ऐतिहासिक महत्व की ओर इतिहासकारों की ओर से ध्यान नहीं दिया गया।

जनपद जालौन के इतिहास में ताई बाई की स्मृति को मिटाने का कार्य तत्कालीन अंग्रेज अधिकारियों द्वारा ही शुरू कर दिया गया था। ताई बाई के द्वारा लगातार सात माह तक क्रान्तिकारी सरकार के रूप में कार्य किया गया। यह दुस्साहस अंग्रेजों को नागवार गुजरा, इसी कारण से ताई बाई से सम्बन्धित समस्त दस्तावेज, वस्तुओं यहां तक कि जालौन स्थित उनके किले को सन् 1880 में जमींदोज करवा दिया। अंग्रेजी सरकार की इस कायरतापूर्ण कार्यवाही के बाद भी इस वीर महिला की वीरता का वर्णन करते हुए तत्कालीन झांसी डिवीजन के एक अंग्रेज अधिकारी जे0 डब्ल्यू0 पिंकने ने लिखा भी था कि वर्ष 1858 के प्रारम्भ होते होते दबोह और कछवाघार के कुछ भागों को छोड़ कर पूरा जालौन जिला ताई बाई के अधिकार में आ गया था।

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

सन् 1838 में जालौन पर अंग्रेजों का अस्थाई अधिकार हो गया था। जालौन के राजा की मृत्यु पश्चात यहां उत्तराधिकार की समस्या सामने आई। राजा की पत्नी ने एक बालक गोद लेकर राज्य करने का विचार किया मगर उसकी अनुभवहीनता और आपसी झगड़ों में यहां की स्थिति बिगड़ गई। तब स्वर्गीय राजा बालाराव की पत्नी लक्ष्मीबाई ने अंग्रेजों से जालौन की रियासत को संभालने का आग्रह किया। तत्पश्चात सन् 1838 में यहां प्रशासक नियुक्त कर दिया गया। इसी दौरान सन् 1840 में गोद लिए बालक गोविन्दराव की मृत्यु हो गई। इस बार अंग्रेजों ने रानी को पुनः किसी को गोद लेने की अनुमति नहीं दी और जालौन रियासत को अंग्रेजी राज्य में मिला लिया। इसी वर्ष अंग्रेजों ने जालौन को जिले के रूप में मान्यता प्रदान की।

जनपद जालौन की पहली महिला क्रान्तिकारी ताई बाई जालौन रियासत के स्वर्गीय राजा बाबारव की बहिन थीं। ताई बाई का विवाह सागर के नारायण राव से हुआ था परन्तु विवाहोपरान्त ताई बाई अपने पति सहित जालौन के किले में ही निवास करने लगीं। राजा गंगाधर राव की मृत्यु पश्चात उनकी पत्नी रानी लक्ष्मीबाई के द्वारा शासन का संचालन उचित रूप से नहीं हो पा रहा था. इधर परिस्थितियों के विषम होने के कारण जालौन को अंग्रेजों ने अपने अधिकार में भी ले लिया था। ताई बाई अपने पूर्वजों का ऐसा अपमान नहीं देख पा रहीं थीं। अंग्रेजों से बदला लेने के लिए उनके भीतर स्वाधीनता क्रान्ति का अंकुर फूटने लगा इसी कारण उन्होंने गुपचुप तरीके से अपनी योजना को क्रियान्वित करने का विचार बनाया।

कानपुर में क्रान्ति की शुरूआत होने की सूचना 6 जून 1857 को उरई पहुंची। इसके पश्चात यहां भी क्रान्तिकारियों ने कार्यवाही प्रारम्भ कर दी। क्रान्ति का आरम्भ होते ही जालौन के डिप्टी कमिश्नर कैप्टन ब्राउन ने भागने में ही अपनी भलाई समझी। कैप्टन ने भागते समय गुरसराय के राजा केशवदास को पत्र लिख कर जालौन में शांति स्थापित करने में सरकारी अधिकारियों की सहायता करने को कहा। कैप्टन के पत्र की भाषा में फेरबदल करके उसे सरकार चलाने के अधिकार-पत्र के रूप में परिवर्तित कर लिया। केशवदास ने अपने दोनों पुत्रों के साथ जालौन आकर अन्य सरकारी अधिकारियों को भगा कर किले पर अधिकार कर लिया। केशवदास के इस कृत्य को ताई बाई आदि ने क्रान्तिकारियों का सहयोग समझकर धन-बल से उसकी सहायता की। इधर ताई बाई अन्य क्रान्तिकारी गतिविधियों का संचालन करने लगी और राजा केशवदास पर विश्वास कर बैठीं।

केशवदास की कुछ गतिविधियों से लगता कि वे क्रान्तिकारियों के पक्ष में हैं तो कभी लगता कि वे अंग्रेजों के पक्ष में हैं। इस बारे में एक घटना को प्रमुखता से देखा जाता है। जालौन में क्रान्ति के पश्चात दो अंग्रेजी डिप्टी कलेक्टर प्रशन्हा और ग्रिफिथ को बन्दी बना लिया गया था। जब तक कानुपर में नाना साहब, तात्या तोपे क्रान्तिकारी के रूप में और जालौन में ताई बाई की सक्रियता रही तब तक केशवदास ने इन अंग्रेज अधिकारियों को बन्दी बनाये रखा। अंग्रेज नाराज न हो जायें इस कारण से केशवदास ने उन्हें मारा भी नहीं और फिर कानपुर में क्रान्तिकारियों की पराजय के साथ ही केशवदास ने दोनों अंग्रेज अधिकारियों को परिवार सहित सकुशल कानपुर पहुंचा दिया।

इस घटना के बाद से ताई बाई को विश्वास हो गया कि केशवदास अंग्रेजों के लिए कुछ भी कर सकता है। इधर पराजित क्रान्तिकारी कानपुर से भागकर कालपी आ गये। तात्या तोपे भी अक्टूबर 1857 को ग्वालियर के विद्रोही

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

सैनिकों के साथ जालौन आ पहुंचे। ताई बाई ने तात्या तोपे के साथ मिलकर केशवदास को वापस गुरसराय जाने पर विवश कर दिया। इस घटना के बाद तात्या ने ताई बाई के पांच वर्षीय पुत्र गोविन्द राव को जालौन की गद्दी पर बिठा कर ताई बाई को संरक्षिका घोषित कर दिया। इस कार्यवाही से जालौन में क्रान्तिकारियों की सरकार का गठन हो गया और पेशवाई राज्य की स्थापना हुई। ताई बाई ने इसके बाद भी अपनी गतिविधियों को विराम नहीं लगने दिया। क्रान्तिकारी गतिविधियों के आगे के संचालन हेतु ताई बाई ने तात्या तोपे को तीन लाख रुपये की सहायता प्रदान की।

क्रान्तिकारियों की सरकार बन चुकी थी और ताई बाई ने सफल संचालन के लिए प्रधानमंत्री तथा अन्य अधिकारियों की नियुक्ति की ताई बाई ने अदभुत क्षमता से अत्यल्प समय में एक बड़ी सेना का गठन करके उसे तात्या तोपे के साथ कानपुर पर अधिकार करने के लिए भेज दिया। कई हमलों में विजय भी प्राप्त हुई परन्तु पूर्ण अधिकार प्राप्त न हो सका। अन्ततः दिसम्बर में एक युद्ध में इस सेना की भयानक पराजय हुई। यह सेना हताश मन से वापस लौट आई। ताई बाई यह भली-भांति समझती थी कि यदि इस समय हिम्मत हारी तो क्रान्तिकारियाँ में जोश पैदा करना मुश्किल हो जायेगा। इस कारण से ताई बाई ने अपने व्यक्तिगत जेवरों और कीमती वस्तुओं को बेचकर प्राप्त धन से सेना का पुनः गठन किया।

जालौन में क्रान्तिकारियों का स्वतन्त्र राज्य पहले से ही स्थापित था, ताई बाई ने सहयोग के लिए चरखारी नरेश से सहायता मांगी। अंग्रेजों के हितैषी चरखारी नरेश ने सहायता देने से मना किया तो ताई बाई ने तात्या तोपे के नेतृत्व में अपनी सेना के द्वारा चरखारी पर विजय प्राप्त की। अपनी समूची सेना के खर्ची, युद्ध खर्ची, वेतन आदि का भार ताई बाई स्वयं ही उठाती रहीं। अपनी सूझबूझ और कुशल नेतृत्व क्षमता के कारण ताई बाई ने सम्पूर्ण जनपद में अंग्रेजों का नामोनिशान भी न रहने दिया।

ताई बाई की बढ़ती शक्ति से अंग्रेज भी परेशान थे। मई 1858 में कोंच के युद्ध में क्रान्तिकारियों की पराजय से अंग्रेजों को जनपद में पुनः घुसने का मौका मिला। कोंच में विध्वंस करने के बाद अंग्रेजों ने सीधे कालपी की ओर रुख नहीं किया और न ही सीधे तौर पर ताई बाई से युद्ध किया। अंग्रेजों ने नई कूटनीति का इस्तेमाल करते हुए ताई बाई के सहयोगियों को मिटाना शुरू कर दिया। इसके लिए उन्होंने युद्ध का नहीं वरन् नरसंहार का सहारा लिया। सबसे पहले हरदोई के जमींदार अंग्रेजी सेना के कोपभाजन बने। भयंकर लूटपाट और नरसंहार किया, एक दर्जन से अधिक क्रान्तिकारियों को खुलेआम पेड़ से लटका कर फांसी की सजा दे दी गई। अंग्रेजों का नरसंहार जारी रहा. अब वे ताई बाई से सीधे न टकराकर जनता को निशाना बना रहे थे। ताई बाई ने नरसंहार को रोकने का उपाय भी किया किन्तु अंग्रेज सीधे-सीधे युद्ध भी नहीं कर रहे थे इस कारण ताई बाई के समक्ष दिक्कत भी आ रही थी।

अन्ततः ताई बाई ने नरसंहार रोकने के लिए मई 1858 को अपने पति और पुत्र के साथ आत्मसमर्पण कर दिया। अंग्रेजों ने लाई बाई की जालौन की समस्त सम्पत्ति जब्त कर ली। राजद्रोह और विद्रोह का आरोप लगाकर उन्हें तथा उनके सहयोगियों को आजीवन कारावास की सजा सुना दी। ताई बाई की लोकप्रियता और शक्ति से घबराकर अंग्रेजों ने उन्हें बंदी जीवन बिताने के लिए जालौन से बहुत दूर मुंगेर- बिहार भेज दिया गया। यहीं पर कैदी जीवन

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

बिताते हुए उनकी मृत्यु सन् 1870 में हो गई लाई बाई की मृत्यु के बाद भी अंग्रेज उनकी लोकप्रियता और शक्ति से घबराते रहे। इसका प्रमाण इस बात से मिलता है कि उनको मृत्यु के बाद उनके कैदी बेटे को पढ़ने के लिए तो इलाहाबाद भेज दिया गया किन्तु उनके बंदी पति को जालौन में रहने की आज्ञा नहीं दी गई।

वर्तमान में ताई बाई को अंग्रेजी कोप के कारण कोई जानता भी नहीं है। एक छोटे से स्थान पर उन्होंने अपनी कार्यक्षमता और कुशल सैन्य संचालन से अक्टूबर 57 से मई 58 तक स्वतन्त्र सरकार की स्थापना कर उसका संचालन किया। जनपद जालौन की इस क्रान्तिकारी महिला को लोग इस कारण से भी नहीं पहचानते हैं कि अंग्रेजों ने यथासम्भव जालौन से ताई बाई से सम्बन्धित सभी वस्तुओं, दस्तावेजों आदि को समूल नष्ट कर दिया था। इसके बाद भी उनकी छवि लोकप्रियता भले ही रानी लक्ष्मीबाई जैसी न रही हो किन्तु जनपद जालौन के निवासियों के मन मष्तिष्क में ताई बाई की छवि आज भी बसी हुई है। अंग्रेजों द्वारा लिखे गये क्रान्तिकारियों के श्रामक इतिहास को पुनः लिखने और सामने लाने की आवश्यकता है. कुछ इसी तरह की पहल की आवश्यकता ताई बाई के गौरवशाली इतिहास को सामने लाने की है। जनपद जालौन की पहली महिला क्रान्तिकारी ताई बाई को इन्हीं समवेत प्रयासों के माध्यम से ही देशवासियों के सामने लाया जा सकता है, तभी हम सभी अन्य वीर-वीरांगनाओं की तरह ही ताई बाई को भी याद रख सकेंगे।

सन्दर्भ सूची :

1. *फॉरेस्ट, जी. डब्लू. द इण्डियन म्यूटिनी 1857-58 झाँसी, कालपी, ग्वालियर, रीप्रिंट, 2003, दिल्ली*
2. *लुआई सी ई. कन्टेम्पोरेरी न्यूज पेपर एकाउन्ट ऑफ इवेन्टस ड्यूरिंग द म्यूटिनी इन सेन्ट्रल इण्डिया 1857-59.*
3. *रिजवी, एस. ए. ए., फ्रीडम मूवमेंट इन उत्तरप्रदेश भाग - 3, 1956-61.*
4. *डाडवेल. एच. एच., द कैंब्रिज हिस्ट्री ऑफ इण्डिया Vol vi कैंब्रिज यूनिवर्सिटी प्रेस, 1929.*
5. *ड्रेक लोकमेन डी. एल.. जालौन.. गजट इलाहाबाद 1909.*
6. *मजूमदार, आर. सी. .. भारत में स्वतंत्रता आंदोलन का इतिहास, खंड III कलकत्ता 1983.*
7. *सिंह बलवंत,.. उत्तर प्रदेश जिला गजेटियर जालौन रामपुर 1989.*
8. *काये & मालेसन, हिस्ट्री ऑफ द इण्डियन म्यूटिनी ऑफ 1857-58 जिल्द 3 लोंगमेन ग्रीन एण्ड कम्पनी 1898 लंदन*
9. *श्रीवास्तव, के. एल., दि रिवोल्ट ऑफ 1857 इन इंडिया- मालवा दिल्ली, 1966.*

Citation

रचना पाल. (2024). 1857 **की क्रांति में जनपद जालौन (लाई बाई का योगदान)**. International educational applied research journal, 08(12), 34–41. https://doi.org/10.5281/zenodo.14587487

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

BLOOD COMPONANT CHANGES IN *CLARIAS BATRACHUS* DUE TO ALPHAMETHRIN INSECTICIDE

[1]Rahis Khan, [2]A. Siddiqui

[1,2]Dept. of Biotechnology Malwanchal University, Indore (M.P.)

DOI: https://doi.org/10.5281/zenodo.14629371

Abstract:

This study investigates the toxic effects of Alphamethrin (75 ppm) on the haematology of *Clarias batrachus* after 96 hours of exposure. The results showed a significant decrease in Red Blood Cell (RBC) count, Haemoglobin (Hb), platelets, Mean Corpuscular Haemoglobin (MCH), Mean Corpuscular Volume (MCV), and Packed Cell Volume (PCV), while White Blood Cell (WBC) count and immune cell populations (neutrophils, eosinophils, monocytes) increased, indicating a stress response. These haematological changes suggest that Alphamethrin induces toxic effects, impairing normal blood function and triggering an immune response, ultimately leading to physiological stress in the fish.

Key Words: Haematology, Alphamethrin, *Clarias batrachus,* Synthetic Pyrethroid, Toxic, Blood

1. Introduction:

The synthetic pyrethroid insecticide alphamethrin is not only used in agricultural practices during crop production, but also in public health programs and as an ectoparasiticide in animals. This account for 30% of global pesticide consumption. (Prama *et al.*,2007).

Alphamethrin have been reported to damage vital organs of various target and non-target species (Joshi *et al*.,2007), also reduces reproductive ability (Singh *et al*., 2010) in fishes

The effect of diseases and unsuitable environmental conditions on fish health has been extensively studied through the investigation of normal haematological parameters. It is well-documented that factors such as diseases, pollution, and the presence of agricultural chemicals in water can lead to significant changes in the blood cells of fish, which in turn can cause substantial losses in aquaculture (Mustafa Dorucu and Asiye Girgin, 2001). Since a significant portion of the world's food supply comes from fish, ensuring the health of fish populations is crucial for food security and sustainability (Tripathi *et al*., 2002). These findings emphasize the importance of monitoring environmental conditions and disease impacts on fish, as they directly affect both the health of the fish and the viability of aquaculture industries.

Fish are closely linked to their aquatic environment, and any changes in this environment are often reflected in alterations in their haematological parameters (Hughes *et al*., 1979; Suzana Golemi *et al*., 2012). Haematological parameters are crucial for assessing the pathophysiological status of fish, as they can indicate the presence of disease or stress induced by pollutants. Blood is particularly sensitive to environmental fluctuations, making it an important medium for studying the effects of toxicants. As such, changes in blood composition can serve as reliable indicators of the impact of pollutants and other stressors on fish health (Pandey and Pandey, 2001). This underscores the value of haematological studies in evaluating

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

the overall health and environmental stress experienced by fish in aquaculture and natural habitats.

Blood serves as a key pathophysiological indicator, being highly sensitive to both internal and external environmental fluctuations, particularly under stress conditions. Toxic pollutants, which have become more prevalent in recent years, significantly affect the blood composition of fish. As a result, haematological parameters are crucial diagnostic tools for investigating diseases or stress in fish, helping to assess the impact of environmental contaminants on fish health (Seth and Saxena, 2003). This highlights the importance of blood analysis in monitoring the well-being of fish in polluted or stressful environments

In recent years, haematological techniques have become increasingly valuable for assessing the toxic effects of chemicals on aquatic organisms, due to the close relationship between fish and their aqueous environment (Musa and Omoregie, 1999; Gabriel *et al*., 2006; Akinrotimi *et al*., 2010). Haematological studies are particularly useful because changes in blood parameters can reveal abnormalities within the fish's body long before any visible symptoms of disease or environmental stress are apparent (Sampath *et al*., 1993). This makes blood analysis an early and effective diagnostic tool for detecting the impact of pollutants and other stressors on fish health

The current investigation was undertaken to investigate haematological changes in *Clarias batrachus* due to alphamethrin insecticide.

2. Material and Methodology:

Experimental animal: Healthy *Clarias batrachus* were used as a experimental animal and it is was collected from local fish market & acclimatized to the laboratory for one week during which they were regularly feed with prawn powder & soya meal.

Test chemical: Alphamethrin was used as a test chemical. Test fishes were exposed to sub-lethal doses (75ul/l) for maximum 96 hrs.

Experimental design:

In the present investigation experimental fishes were divided into two groups.

1. Control group: - In this group 10 fishes were kept and exposed to normal water.
2. Experimental group: - In this group 40 fishes were exposed to 75 µl concentration of alphamethrin solution.

Experimental duration: In both control and experimental group fishes were exposed to maximum 96 hrs.

Autopsy: Fishes of control and experimental groups were sacrificed at 0 hrs. 24 hrs, 48hrs, 72 hrs and 96 hrs. Blood collected by cardiac puncture of *Clarias batrachus* then processed for various haematological tests.

Haematological analysis

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

a. **RBC & WBC Counting**
RBC &WBC counting were done by MANUAL METHOD **(Sharma and Singh, 2000).**

b. **Differential Leukocytes counting**
DLC Counting was done by LEISHMANN METHOD **(Sharma and Singh, 2000).**

c. **Haemoglobin % Analysis**
Hb% analysis was done by SAHIL'S METHOD **(Sharma and Singh, 2000).**

d. **Platelets, MCV, MCH & PCV counting**
Platelets, MCV, MCH & PCV counting were done by MANUAL METHOD **(Sharma and Singh, 2000)**

3. Results:

In the present investigation haematological estimation of control and experimental fish were done. The haematological parameters were RBC, WBC, DLC (Neutrophiles, Eosinophiles, Lymphocytes, Basophiles and Monocytes), platelets, PCV, MCV and MCH.

In control haematological values (Table 01 and Figure 01) were RBC (8.42 million/ml), WBC (5.31x10^9cells), Hb (10.87 g/dl), Neutrophiles (20.71%), Eosinophiles (9.22 %), lymphocytes (71.56%), Basophiles (4.38 %), Monocytes (3.68%), Platelets (131%), PCV (32.83%) MCV (80.80fl) and MCH (36.00 pg).

In the present investigation at the 24 hrs. haematological values were RBC (7.47million/ml), WBC (6.60 x10^9cells), Hb (8.90 g/dl), Neutrophiles (21.93%), Eosinophiles (10.41%), lymphocytes (73.48%), Basophiles (5.25%), Monocytes (4.31 %), Platelets (117.6%) , PCV (28.30%), MCV (75.98 fl) and MCH (34.24 pg).

In the present investigation at the 48 hrs haematological values were RBC (5.79 million/ml), WBC (7.33 x10^9cells), Hb (7.54 g/dl), Neutrophiles (22.80 %), Eosinophiles (11.02%), lymphocytes (76.41%), Basophiles (5.85%), Monocytes (4.98%), Platelets (125.00%) , PCV (26.41%) , MCV (71.55 fl) and MCH (32.42 pg).

In the present investigation at the 72 hrs haematological values were RBC (4.51 million/ml), WBC (10.77 x10^9cells), Hb (6.21 g/dl), Neutrophiles (19.48 %), Eosinophiles (10.00%), lymphocytes (70.61%), Basophiles (3.95 %), Monocytes 3.231 %), Platelets (116.2%), PCV (23.41%) MCV (69.13 fl) and MCH (30.10 pg).

In the present investigation at the 96 hrs haematological values were RBC (3.67 million/ml), WBC (14.43 x10^9cells), Hb (3.79 g/dl), Neutrophiles (18.77 %), Eosinophiles (8.67 %), lymphocytes (69.52%), Basophiles (3.06 %), Monocytes (3.18 %), Platelets (105.23%), PCV (14.63 %) MCV (68.58 fl) and MCH (28.69 pg).

RBC, Hb, Platelets, PCV, MCV and MCH values were decreased as compared to control value at 24, 48, 72 and 96 hrs. WBC value were increased as compared to control at 24, 48, 72 and 96 hrs. Neutrophil, Basophiles, Eosinophiles, Lymphocytes and Monocytes values increased at 24 and 48 hrs and then decreased at 72 and 96 hrs as compared to control value.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

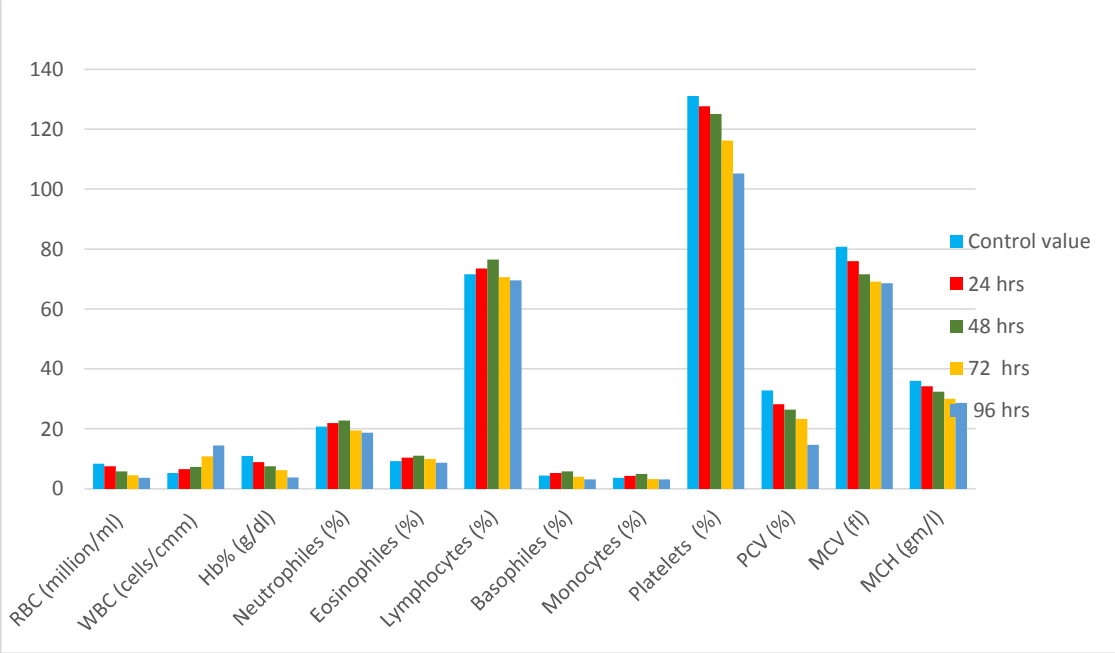
Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Table 01:- Haematological changes in *Clarias batrachus* due to alphamethrin insecticide

Peramaters	Control value	Experimental value			
		24 hrs	48 hrs	72 hrs	96 hrs
RBC (million/ml)	8.42	7.47±0.22	5.79±0.17	4.51±0.26	3 .67±0.29
WBC (cells/cumm)	5.31	6.60±0.19	7.33±0.22	10.77±0.18	14.43±0.18
Hb% (g/dl)	10.87	8.90±0.31	7.54±0.33	6.21±0.116	3.79±0.12
Neutrophiles (%)	20.71	21.93±0.12	22.80±0.19	19.41±0.28	18.77±0.23
Eosinophiles (%)	9.22	10.41±0.14	11.02±0.11	10.00±0.20	8.67±0.18
Lymphocytes (%)	71.56	73.48±0.34	76.41±0.23	70.61±0.32	69.52±0.34
Basophiles (%)	4.38	5.25±0.12	5.85±0.29	3.95±0.12	3.06±0.16
Monocytes (%)	3.68	4.31±0.26	4.98±0.20	3.31±0.24	3.18±0.12
Platelets (%)	131	127.60±0.18	125.00±0.30	116.20±0.38	105.23±0.24
PCV (%)	32.83	28.30±0.27	26.41±0.18	23.41±0.14	14.63±0.16
MCV (fl)	80.80	75.98±0.23	71.55±0.32	69.13±0.14	68.58±0.35
MCH (pg)	36.00	34.24±0.20	32.42±0.32	30.10±0.22	28.69±0.27



E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

Figure 01: Hematological changes in *clarias batrachus* due to alphamethrin insectiside

4. Disscussion:

Blood is the key factor which affect all pathophysiological factors of the body, making blood parameters essential for diagnosing the structural and functional status of fish exposed to toxicants. In this study, significant alterations were observed in the blood components of fish treated with alphamethrin. Notably, there was a reduction in red blood cell count, hemoglobin (Hb) levels, platelets, packed cell volume (PCV), mean corpuscular volume (MCV), and mean corpuscular hemoglobin (MCH). Conversely, white blood cell (WBC) counts increased, and the differential leucocyte count, including neutrophils, eosinophils, lymphocytes, basophils, and monocytes, showed fluctuations. These changes suggest that alphamethrin exposure has a profound impact on the haematological profile of fish, indicating stress and potential toxicity.

The reduction in red blood cell (RBC) count, haemoglobin (Hb) levels, and packed cell volume (PCV), which are essential for oxygen transport, can result from the inhibition of erythropoiesis and haemoglobin synthesis, as well as increased erythrocyte destruction in hematopoietic organs. Studies in fish species like *Catla catla* (Vani *et al*., 2011) and *C.gariepinus* (Adamu, 2009) have shown that exposure to environmental stressors such as plant extracts (e.g., *Moringa oleifera* seed extract) (Kavitha *et al*., 2012) or toxins like tobacco leaf extracts and cassava effluents leads to significant reductions in RBCs and Hb. This may be due to mechanisms such as erythroblastosis, which causes anaemia by producing immature RBCs that are ineffective at oxygen transport. Such findings underscore the detrimental effects of environmental pollutants and toxins on blood health in aquatic organisms, leading to impaired oxygen-carrying capacity and overall haematological dysfunction.

In the light of the present study, the mean value of PCV decreased progressively in the experimented group compared to the control. The result agreed with the work of Akinrotimi *et al.* (2009) in haematological indices of *Tilapia guineensis* subjected to handling stress. The decrease in the PCV indicates the worsening of the condition of the organism and developing of anaemia. Platelets are nucleated cells which are responsible for blood clotting in fish; slight decrease in values observed in this study may signify the effect on platelet (thrombocyte) production.

Haematological indices, including RBC count, haemoglobin concentration, and PCV, are recognized as indicators of secondary responses to pollutants in organisms (Rogers *et al*., 2003; Akinrotimi *et al*., 2012b; Akinrotimi *et al.,* 2012c). Exposure to alphamethrin caused a significant reduction in platelet counts in fish. A similar decrease in platelet counts was reported in *O. mykiss* exposed to cypermethrin (Velisek *et al*., 2006). This decline may be associated with platelet sequestration in the spleen, reduced production, or increased destruction of platelets.

The Differential Leucocyte Count (DLC) exhibited fluctuations in this study. An increase in neutrophils, monocytes, and eosinophils was observed, while lymphocytes and basophils

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

showed a decrease in monogenean-infected fishes. Comparable findings were reported in helminth-infected *Schizothorax* spp. and *Cyprinus* spp. (Shah *et al*., 2009).

A significant increase in WBC count was observed as a haematological response to alphamethrin exposure. Similar findings have been reported in common carp (*Cyprinus carpio*) following acute exposure to phenitrothion, imidan, and dichlorvos (Svobodova, 1991, 1996, 1998). This increase is likely due to the release of white blood cells from the spleen into the bloodstream to counteract the toxicant. In the present study, the substantial rise in leukocyte count may be attributed to a general immune activation and a defensive response to cypermethrin. White blood cells play a crucial role in protecting the organism during injury, haemorrhage, or the invasion of foreign antigens (Velmurugan *et al*., 2016). During stress, leukocyte levels increase significantly to help the organism cope with the adverse conditions and strengthen its defense mechanisms (Deshmukh, 2016).

Exposure of *Clarias batrachus* to alphamethrin (75 µl/l) for 96 hours in the present study proved toxic, leading to significant haematological changes. Red blood cell count, haemoglobin level, platelet count, PCV, mean corpuscular volume (MCV), and mean corpuscular haemoglobin (MCH) values decreased, while the Differential Leucocyte Count (DLC) fluctuated, and white blood cell (WBC) count increased. These findings align with those reported in previous studies.

5. Conclusion:

Based on the results obtained in this study, it can be concluded that a 96-hour exposure to 75 ppm of alphamethrin (aqueous solution) has toxic effects, altering the haematology of the fish. Our findings clearly indicate that alphamethrin disrupts the fish's physiology, causing haematological disturbances that could impair its ability to combat diseases and reduce its chances of survival and growth. Therefore, it is recommended that users of this pyrethroid pesticide (alphamethrin) exercise caution regarding the dosage applied.

6. References:

1. Adamu KM (2009) Sublethal effects of tobacco (*Nicotiana tobaccum*) leaf dust on enzymatic activities of Heteroclarias (a hybrid of *Heterobranchus bidorsalis* and *Clarias gariepinus*). *Jor. J. Biol. Sci*., 2: 151–158
2. Adhikari S, Sarkar B, Chatterjee A, Mahapatra CT and Ayyappan S. (2004) Effects of cypermethrin and carbofuran on certain hematological parameters and prediction of their recovery in a freshwater teleost, Labeo rohita (Hamilton). Ecotoxicology and Environmental Safety, 58:220–226.
3. Akinrotimi OA and Gabriel UU (2012) Haematological profile of Nile Tilapia (Oreochromis niloticus) from ARAC Reservoir Aluu, Port Harcourt, Nigeria. Advances in Students Res 2, 31-37.
4. Akinrotimi OA and Gabriel UU (2012) Haematological profiles of Clarias gariepinus brood fish raised in water recirculating aquaculture system. Advances Agri sci Engineering Res 2, 97-103.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

5. Akinrotimi OA, Abu OMG, Agokei EO and Uedeme-Naa B (2010) Effects of direct transfer to fresh water on the haematological parameters of Tilapia guineensis (Bleeker 1862). Animal Research International. 7(2):1199-1205.
6. Akinrotimi OA, Abu OMG, Ansa EJ, Edun OM and George OS (2009) Haematological responses of Tilapia guineensis to acute stress. International J National and Applied Sci 5, 338-343.
7. Barata C, Medina M, Telfer T and Baird D (2002) Determining demographic effects of cypermethrin in the marine copepod Acartia tonsa: stage-specific short tests versus life-table tests. Arch. Environ. Contam. Toxicol, 43: 0373–0378.
8. Boxaspen K and Holm JC (2001) The development of pyrethrum-based treatments against the ectoparasitic salmon lice Lepeophtheirus salmonis in sea cage rearing of atlantic salmon Salmo salar L. Aquacult. Res, 32: 701–707.
9. Cullen MC and Connell DW (1992) Bioaccumulation of chlorohydrocarbon pesticides by fish in the natural environment. Chemosphere, 25:1579–1587.
10. Deshmukh D (2016) Hamatological response in a freshwater fish Channa Striatus exposed to endosulfan pesticide. Biosci. Discov., 7: 67–69
11. Dorucu M and Girgin A (2001) The effect of cypermethrin on some haematologicalparameters of Cyprinus carpio. Aquaculture international., 9: 183-187.
12. Gabriel UU, Ezeri GNO, Ikeme PM and Ikwut EF (2006) Haematoxicity of proxone to juvenile Clarias gariepinus (Burchell, 1822) under laboratory conditions. Pollution Research. 25(2):1-6
13. Golemi S, Medja N and Lacej D (2012) Biochemical and Hematological Parameters in the Fresh Water Fish, Cyprinus carpio (LINNAEUS, 1758) of Lake Shkodra (Albania). Int. Environmental Application & Science, 7(5): 998-1002.
14. Huges GM, Perry SF and Brown RM (1979) A morphometric study of effect of nickel, chromium and cadmium on the secondary lamellae of rainbow trout gills. Water. Res., 13: 665-679.
15. Jaffar HA and Rani VJ (2009) Effect of phosolone on haematological indices in the tilapia, Oreochromis mossambicus .Turkish Journal of Veterinary Animal Science, 33(5): 407-411.
16. John P and Prakash A (2003) Bioaccumulation of pesticides on some organs of freshwater catfish Mystus vittatus. Bull. Environ. Contam. Toxicol., 70: 1013–1016
17. Joshi N, Dharmlata, Sahu AP. Histopathological changes in the liver of Heteropneustes fossilis exposed to cypermethrin. Journal of Environmental Biology 2007;28:35-37.
18. Kakko I, Toimela T and Tahti H (2003) The synaptosomal membrane bound ATPase as a target for the neurotoxic effects of pyrethroids, permethrin and Cypermethrin. Chemosphere, 51:475–480.
19. Kavitha C, Ramesh M, Kumaran SS and Lakshmi SA (2012) Toxicity of Moringa oleifera seed extract on some hematological and biochemical profiles in a freshwater fish, Cyprinus carpio. Exp. Toxicol. Pathol., 64: 681–687
20. Musa SO and Omoregie E (1999) Haematological changes in Clarias gariepinus exposed to malachite green. Journal of Aquatic Sciences, 14:37-42.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

21. Pandey AK and Pandey GC (2001) Thiram and Ziram Fungicides induced alterations on some haematological parameters of fresh water cat fish Heteropneustes fossilis. Indian. J. Environ. & Ecoplan, 5(3): 437-442.
22. Park JH, Cho KS, Lee WH, Cho YJ and Yeon IJ (2004) Change of acute toxicity and hematological parameters of Pseudobagrus fulvidraco to lindane. Environ Eng Res., 9(4): 154-159.
23. Polat H, Erkoc FU, Viran R and Kock O (2002) Investigation of acute toxicity of beta-cypermethrin on guppies, Poecilia reticulata. Chemosphere, 49:39-44.
24. Prama MJ, Lotegtec A, Compana M, Bacchetta C. Changes of hematological parameter in Prochilodus jineatus (Pisces: Prochilodontidae) exposed to sublethal concentration of cypermethrin. Journal of Environmental Biology 2007;28:147-149.
25. Rogers JT, Richard JG and Wood GM (2003) Ion regulatory disruption as the acute toxic mechanism for lead in the rainbow trout. Aquatic Toxicol 62, 15-34.
26. Saleh YS and Marie MAS (2016) Use of Arius thalassinus fish in a pollution biomonitoring study, applying combined oxidative stress, hematology, biochemical and histopathological biomarkers: A baseline field study. Mar. Pollut. Bull., 106: 308–322.
27. Sampath K, Velamnia SK and James R (1993) Haematological changes and their recovery in Oreochromis mossambicus as a function of exposure period and sublethal levels of Elalus. Acta Hydriobiology. 35:73-83.
28. Seth N and Saxena KK (2003) Hematological responses in a freshwater fish Channa punctatus due to fenvalerate. Bull Environ Contam Toxicol., 71(6): 1192-1199.
29. Shah AW, Parveen M, Mir SH ,Sorwar SG and Yousuf AR (2009) Impact of helminth parasitism on fish haematology of anchar lake, Kashmir. Pakistan Journal of Nutrition,8(1): 42-45.
30. Sharma I J and Singh HS (2000) Students Laboratory Manuals of Veterinary Physiology, 1st edn. Kalyani Publisher, New Delhi, India.
31. Singh PK, Ansari BA. Effect of neem-based formulations (Nimbecidine and Ultineem) on the sparing success of ~ 418 ~ International Journal of Fisheries and Aquatic Studies http://www.fisheriesjournal.com zebrafish Danio rerio (Cyprinidae). Bioscan Research 2010;5:669-672.
32. Svoboda M, Luskova V, Drastichova J and Zlabek V (2001) The effect of diazinon on haematological indices of common carp Cyprinus carpio Acta Vetrinary Bruno,70:457-465.
33. Svobodova Z, Machova J, Kolaova J, Vykusova B and Piaaka V (1996) The effect of selected negative factors on haematological parameters of common carp Cyprinus carpio L. and tench, Tinca tinca L. Proc. Sci. Papers to the 75th Anniversary of Foundation of the RIFCH VodAany, 31:112 – 116.
34. Svobodova Z, Pravda D and Palaakova J (1991) Unified methods of haemathological examination of fish. Research Institute of Fish Culture and Hydrobiology, Vod Aany, 31 p.

E-ISSN No: 2456-6713 Print ISSN No: 3048-6459

International Educational Applied Research Journal

Peer-Reviewed Journal-Equivalent to UGC Approved Journal

A Multi-Disciplinary Research Journal

Impact Factor: 5.924

35. Svobodova Z, Vykusova B and Groch L (1998) Pesticides and fish poisoning. Agrochemicals and Animal Poisoning: Towards Toxicovigilance, IUTOX–Satellite Meeting, Lyon, 7 p.
36. Tripathi G and Harsh S (2002). Fenvalerate-induced macromolecular changes in the catfish, Clarias batrachus. J. Envir on. Biol, 23: 143-146.
37. Vani T, Saharan N, Mukherjee S, Ranjan R, Kumar R and Brahmchari R (2011) Deltamethrin induced alterations of hematological and biochemical parameters in fingerlings of Catla catla (Ham.) and their amelioration by dietary supplement of vitamin C. Pestic. Biochem. Physiol., 101: 16–20
38. Velisek J, Wlasow T, Gomulka P, Svobodova Z, Dobsikova R, Novotny L and Dudzik M (2006) Effects of cypermethrin on rainbow trout (Oncorhynchus mykiss). Veterinarni Medicina, 51(10): 469-476.
39. Velisek J, Wlasow T, Gomulka P, Svobodova Z, Dobsikova R, Novotny L and Dudzik M (2006) Effects of cypermethrin on rainbow trout (Oncorhynchus mykiss). Vet. Med., 51: 469
40. Velmurugan B, Cengiz EI, Senthilkumaar P, Uysal E and Satar A (2016) Hematological parameters of freshwater fish Anabas testudineus after sublethal exposure to cypermethrin. Environ. Pollut. Prot., 1: 32–39
41. Yilmaz M, G¨ul A and Erbas li K (2004) Acute toxicity of alpha cypermethrin to guppy (Poecilia reticulata, Pallas 1859).Chemosphere.; 56: 381–385.

Citation

Rahis Khan and A. Siddiqui. (2024). BLOOD COMPONANT CHANGES IN CLARIAS BATRACHUS DUE TO ALPHAMETHRIN INSECTICIDE. International educational applied research journal, 08(12), 40–53. https://doi.org/10.5281/zenodo.14629371