

## ORIGINAL ARTICLE

# Hematological Anomalies in Rice Mill Workers of District Sultanpur, Uttar Pradesh

Ahinsa Tripathi<sup>1</sup>, N.B.Singh<sup>2</sup>, F.W. Bansode<sup>3</sup>, R.K.Singh<sup>4</sup>

Research Scholar<sup>1</sup>, GBTU, Lucknow, India

Civil Engineering Department<sup>2</sup>, IET, Lucknow, India

Divisions of Endocrinology<sup>3</sup> & Toxicology<sup>4</sup>, CDRI, Lucknow, India

### ABSTRACT

India is the second largest producer of rice in the world next to China. It contributes about 20 percent of the world output of rice. It is grown in almost all the provinces of the country but more than 86 percent of the total production accounts for the states of Andhra Pradesh, West Bengal, Tamil Nadu, Uttar Pradesh, Bihar, Orissa, Madhya Pradesh, Punjab, Assam. The cultivation of rice is done in irrigated fields. There have been many reports on health effects of rice mill workers due to rice husk exposure. Rice husk causes adverse effects on hematological parameters in rice mill workers. Total numbers of 100 blood samples were collected from rural and urban area of rice mill workers of District Sultanpur, Uttar Pradesh. They were interviewed using standardized questionnaire and hematological parameter tests were performed. Hematological test parameters showed reduced levels in rice mill workers. This study would be helpful in preventing longstanding harmful effects of such exposures. It is concluded that rice husk dust causes deterioration of hematological parameters in subjects working at rice mills. The findings of this study recognized the role of rice husk dust for a longer duration in decline of hematological parameters test among rice mill workers. Hematological parameters tests revealed some degree of impairment compared to the healthy population.

**Keywords:** Hematological Parameters, UP

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### INTRODUCTION

At present, accelerating the rapid development of the whole country consumes a huge amount of natural resources by industry and agriculture. Use of chemicals in agriculture, development of traffic and transport systems, etc, causes pollution to the environment. Air pollution in India are dusts, gases, volatile vapour, etc. It is dependent on location, type of industrial or agricultural activities. In industrial estates, several factories are settled nearby in the same provided area. Total dust and gases emitted from the factories can be numerous and concentrated in a small confined area to the environment. Often, the amount of emission is exceeded over the standard level of acceptance. This is very harmful to human and other living things in the area. Dust from air pollution affects in human's respiratory system directly. Rice is the staple food for 65% of the population in India [1-3]. West Bengal is the leading producer of paddy in the country. It accounts for 16.39% of the total production. There is significant proportion of the population working in this sector. Rice cultivation is done in the irrigated fields. The crop is harvested, dried and milled [2]. A large amount of dust is generated especially during the milling activities. Rice mill workers are potentially exposed to organic and inorganic dust and rice husk that may have adverse effect on hematological parameters. Several reports have suggested that unprotected dust exposures in agricultural settings may lead to hematological disorders. There have been many reports on health effects of rice husk exposures. Rice husk has a long history association with disease, and its adverse effect on various organ such as eyes, nose, skin, lung and the hematological parameters have been described. Rice husk is known to have a high silica content. This study was thus carried out in Sultanpur District to determine whether there were adverse health effect associated with occupational exposure to rice husk dust. We have collected 100 blood samples from rice mill workers in and around city of Sultanpur.

### MATERIALS & METHODS

The study population consisted of all workers employed in rice mill in the Sultanpur District. Altogether there were 129 workers employed at the time of the study period, only 100 workers were selected for

this study. The controls were of the same sex ethnic group and from a similar agriculture work background of rice husk dust exposure. Each subject and control was interviewed by a physician using a standard questionnaire based on hematological symptoms. The questionnaire were pertaining the past medical history , personal details and smoking .Blood samples were also collected by a finger prick using a triangular surgical needle . Blood samples were collected in vial EDTA tubes and analyzed it using the MS-9 fully automatic analyzer.

## RESULT

100 workers with mean age of 40 years were assessed . mean duration of employment was 12 year. A significantly greater proportion of rice millers was found to have conjunctivitis , pterygium , eosinophilia, anemia. In our study significant changes in hematological parameters were observed. There were no significant differences between the mean age of the subjects and the controls. The smoking habits of the workers and controls are compared but there was no significant difference. 100 rice mill workers were assessed. In our study significant changes in hematological parameters were observed .Greater proportion of anemia, leukocytosis eosinophilia , pterygium and conjunctivitis was observed significant changes in anemia and in leukocytosis were observed.

Table:- 1: Hematological Anomalies in Rice Mill Workers of District Sultanpur, Uttar Pradesh.

Sr. No.	Parameters	Control	Treated
1	<b>Hemoglobin(gm/dl)</b>	13.17±0.72	7.73±0.78
2	<b>T-RBC (x10<sup>6</sup>/mm<sup>3</sup>)</b>	4.83±0.22	1.63±0.13
3	<b>TLC(x10<sup>3</sup>/mm<sup>3</sup>)</b>	6.88±0.39	15.95±0.68
4	<b>Polymorph(%)</b>	62±2.3.0	42±4.0
5	<b>Lymphocyte(%)</b>	22±3.0	45±2.0
6	<b>Monocyte(%)</b>	6±1.0	7±2.0
7	<b>Eosinophil(%)</b>	8±1.0	5±1.0
8	<b>Basophil(%)</b>	2±1.0	1±1.0
9	<b>MCV (micron<sup>3</sup>)</b>	105±3.0	95±4.0
10	<b>MCH(pg/ml)</b>	8.75±0.72	6.33±0.62
11	<b>MCHC(g%)</b>	22.75±0.78	14±0.74
12	<b>Platelets(x10<sup>3</sup>/mm)</b>	304±23.0	225±27.0

## DISCUSSION

Present study have shown significant association of various clinical signs and symptoms and hematological changes , with occupational exposure to rice husk dust . The hematological disorders suggest that the harmful effects may be link to both non specific irritation and allergic responses to rice husk dust .The rice husk is shown to be covered with small needlelike hairs that project outward as sharp , elongated spines . these spikes are about 200 -300u in length and about 30-40u in diameter at the base, tapering into sharp ends. The structure of these spikes suggest that they may be responsible for the harmful effects of the rice husk dust exposure.From this study , it seems that there is an impairment of the hematological parameters for the rice millers and it indicate further extensive epidemiological and pathological studies for the health and safety of the rice mill workers. The clinical and hematological findings suggest that the harmful effect linked with rice husk dust. There is significant greater proportion of anemia and leukocytosis was observed. Rice husk dust could cause kerato-conjunctival irritation, corneal scars, chronic conjunctival inflammation , pterygium formation and pruritus [4-9] . This study would be helpful in preventing longstanding harmful effects of such exposures of rice husk.

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