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Toxicity of Magnesium Carbonate Against Lesser Grain Borer, *Rhizopertha dominica (Fab.)* on Stored Wheat.

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ABSTRACT
Rhizopertha dominica (Fab.) is the most important storage pest of wheat, Toxicity of magnesium carbonate against adults and larvae of Rhizopertha dominica (Fab.) was evaluated in a laboratory conditions. On the basis of LD_{50} value magnesium carbonate exhibited less toxicity (2.0040) to larvae and more toxicity (01.8790) to adults of Rhizopertha dominica (Fab.)
Key words *– Magnesium carbonate, Wheat seeds, Rhizopertha dominica (Fab.), Stored grains.*

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I. INTRODUCTION

Wheat is the world's most important crop. Its storage is threatened by several insect pests [1] Wheat grains are more suitable for the development of stored grain pests. The average percent infestation of various insect pests on stored wheat was 9.19 which is equivalent to calculated weight loss of 2.03 percent [11]

Rhizopertha dominica (Fab.) is one of the most devastating pests of stored grains both at larval and adult stage [9]. This stored grain pest destroy completely the endospermic portion of the seed leaving only the seed coat. They impart economic losses in terms of grain mass [12] and nutrient depletion [8] The seed loses completely its viability and grains are rendered unfit for conversion into flour. Generally pest control in the storage was done by spraying and fumigation using synthetic insecticides [3,4]

Use of commercially available, conventional synthetic insecticides have raised serious ecological and economical problems due to their high cost as well as environmental hazards. They also contribute towards the development of resistance in the target species.[6]

For centuries the seeds has been protected from storage grain pest infestation by adding some form of powder or dust directly to the seeds. [2,7,13,14] The direct mixing of persistent and toxic dust as insecticides with seeds may prove hazardous during handling and many storage pests have developed resistance against these insecticides [5]

Regarding the negative effect of synthetic and organic insecticides, the alternative control by using inorganic compound magnesium carbonate was reported to have a fair degree of toxicity in many insect pests [10]

Keeping in view the present study was undertaken at the department of Entomology, Govt. College, Kota to evaluate the insecticidal property of the inorganic compound against the adults and larvae of *Rhizopertha dominica (Fab.)*

II. MATERIAL AND METHOD

The Various dosages of magnesium carbonate were weighed and the required quantity of this protectant was spread equally in petri dishes separately with the help of spatula. The experimental insect lesser grain borer were obtained from laboratory culture maintained on wheat at the 30^0 C temperature and 70% relative humidity. Twenty newly emerged adult insects were released in each petri dish where they remained in contact with this seed protectant for twenty-four hours. Each petri dish was covered with muslin cloth and tied with rubber band, then kept as such in suitable environmental conditions for 24 hours. Each treatment was replicated three times. The adult mortality was recorded after twenty-four hours.

Aforementioned method was also repeated for the measurement of toxicity of magnesium carbonate against the larvae of *Rhizopertha dominica (Fab.).* In this experiment the larval mortality was also recorded after twenty-four hours.

III. RESULT AND DISCUSSION

A series of experiments were conducted under laboratory conditions for determination of toxicity of magnesium carbonate against adults and larvae of *Rhizopertha dominica (Fab.)*.It was found that magnesium carbonate was more toxic for adults giving LD_{50} value 01.8790 while this seed protectant was less toxic for larvae giving LD_{50} 2.0040 after 24 hours. The order of toxicity of this inorganic compound magnesium carbonate against adults and larvae of experimental insect lesser grain borer, *Rhizopertha dominica (Fab.)* was as follows - Adults (01.8790) > Larvae (2.0040).

Table -1

Toxicity of Magnesium Carbonate Against *Rhizopertha dominica (Fab.)*

S.No.	Life Stage	Heterogeneity χ^2	Regression Equation	LD_{50}
1	**Adults**	**2.4636**	**Y=1.6666 X-0.4564**	**1.8790**
2.	**Larvae**	**2.6593**	**Y=1.0785 X +1.4387**	**2.0040**

IV CONCLUSION

It has been concluded through, the present investigations that magnesium carbonate has insecticidal property against both adults and larvae of *Rhizopertha dominica (Fab)*. it can be used as an alternative of synthetic insecticides.

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