Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 45 No. 3 (2024)

An Observational Study of Musta (Cyperus Rotundus Linn.) in Context with Preservation of Brown Rice (Oryza Sativa l.)

Dr. Heli Patel [1] , Dr. Satej Banne [2]

[1] *P.G. Scholar, Dept. of Dravyaguna, Parul Institute of Ayurved, Parul University, Vadodara(Gujarat), India.*

[2]. *Associate Professor, Dept. of Dravyaguna, Parul Institute of Ayurved, Parul University,Vadodara (Gujarat), India.*

Abstract:- Ayurveda is the science of life and Ayurveda has given three sub pillars- Ahara, Nidra and Brahmacarya.Ahara has been enumerated first, which shows its importance and It is a well- known fact that Ahara, supplies proper and adequate nutrition in the form of protein , carbohydrates, fats, minerals, vitamins and water. In recent years, grain oxidation and grain spoilage caused by microorganisms is one of the most important issues facing the food industry and consumers. Grains are one of the major food staples in the world. The cereal grains are easily susceptible to damage by environmental factors mainly consist of temperature, relative humidity (RH), rainfall etc. Therefore, there is a continuous search for new preservation techniques in food industries, to satisfy the customer demands on the addition of natural food preservatives, devoid of pathogenic contaminants and without changes in organoleptic properties.From the ancient time rhizomes and tubers of Musta Cyperus rotundus L. have been used as traditional medicine.Many researchers have reported the biological and pharmacological activities of C. rotundus extracts studied, Antibacterial activity, Insecticidal activity 6 Antioxidant activity 7 Herbal preparations with more possible combinations and doses to control storage insect pests or preservation of food at domestic level without any adverse effects on the quality of food grains.Here the Musta Cyperus rotundus L tablet used to preservation of brown rice

Keywords*:* Cyperus rotundus L., Musta Preservation, food ,Brown rice.

1. Introduction

Ayurveda is the science of life and Ayurveda has given three sub pillars- Ahara, Nidra and Brahmacarya which support the body itself. Ahara has been enumerated first, which shows its importance and It is a well-known fact that Ahara, supplies proper and adequate nutrition in the form of protein , carbohydrates, fats, minerals, vitamins and water. 1 In recent years, grain oxidation and grain spoilage caused by microorganisms is one of the most important issues facing the food industry and consumers. Grains are one of the major food staples in the world.

The cereal grains are easily susceptible to damage by Environmental factors mainly consist of temperature, relative humidity (RH), rainfall etc. 2 Also moisture content, flour beetles and pathogens during storage, post harvesting. Grain preservative techniques namely drying, freezing, and dehydration, acquire little advantages. However, they cause few undesirable alterations in the organoleptic and nutritional properties of the preserved food items. Therefore, there is a continuous search for new preservation techniques in food industries, to satisfy the customer demands on the addition of natural food preservatives, devoid of pathogenic contaminants and without changes in organoleptic properties. 3 Cyperus rotundus L. (Cyperaceae), is a erect and perennial weed and is widely distributed in worldwide. From the ancient time rhizomes and tubers of C. rotundus have been used as traditional medicine.Many researchers have reported the biological and pharmacological activities of C. rotundus extracts studied, Antibacterial activity 4 , Insecticidal activity 5 Antioxidant activity 6 .C.rotundus rhizome has α- cyperone (38.46%), cyperene (12.84%) and α-selinene (11.66%) was found to be the major components in the essential oil, followed by β-caryophyllene oxide (4.33%), (d)-limonene (3.62%), α-calacorene (3.14%), and γ-muurolene (3.13%), besides other components (0.13–1.58%) were found. 7 .Herbal

preparations with more possible combinations and doses to control storage insect pests at domestic level without any adverse effects on the quality of food grains.

2. Objectives

AIM

1. To Observe Preservative Effect of Musta (Cyperus rotundus Linn.) in Brown rice (Oryza sativa L.)

OBJECTIVES

1. Pharmaceutical & Analytical evaluation of Musta (Cyperus rotundus Linn.)
2. To evaluate the preservative effect of Musta (Cyperus rotundus Linn.) in Brown rice (Oryza sativa L.)

3. Methods

1) Source of data-

• Literary source: Will be collected from library of Parul Institute of Ayurved, Limda, Vadodara, Internet and other sources.

• Analytical: Analytical study will be carried out in the Quality Control Laboratory, PIA.

2) Collection of Drug -Musta (Cyperus rotundus Linn.)Rhizome 8 will be collected from the natural habitat in summer 9 .Identification and authentication will be done by experts.

3) Glass jar: One Kg taken from wholesale Glass store from Gujarat.

a)Pharmacognostical study of Drug- Collected samples of Musta (Cyperus rotundus Linn.)will be subjected to following procedure-

3) Collection of Grains)Grains i.e (Oryza sativa L.) collected from the mill ,Gujarat State.

 Rice (Oryza sativa L.) collected in November-December month. Method of tablet Musta (Cyperus rotundus Linn.) formation 10

1. Authentication of Musta (Cyperus rotundus Linn.) done
2. Rhizome were collected from the field.
3. Rhizome were dried in sun shadow.
4. Made into fine powder.
5. Powder fined with 80 mesh sieve.
6. Tablet were formed through all standardize technique.
7. Tablet kept in air tight container.

Study Design

Sample(*Oryza sativa* L.)

GROUP A (Oryza sativa L.) (i.e 1000 gm)	GROUP B (Oryza sativa L.) (i.e 1000 gm)	GROUP C (Oryza sativa L.) (i.e 1000gm)
Sample will be kept in air tight container	Sample kept with Tablet of Musta (Cyperu rotundus Linn.)i.e 50gm of Tablet (Replication has been done B1,B2,B3) (500mg -1 tablet) used.	Sample kept with of Parad 50 gm (Replication has been done C1,C2.C3) 500 - tablet

TABLE 1:Efficacy of Musta (Cyperus rotundas L.) tablets in Preservation of stored brown rice.Tablet kept on 1/2/23 50gm drug dose taken in 1kg brown rice

Observation	Groups	No. of days Infestation	No. Insect Alive	No. Insect Dead	Wt. of Residue	Wt. of Grains
FIRST-40 Days (11/3/23)	A	28thDay	12	1.33	1000gm	1000gm
	B	25th Day	3.33	12	1000gm	1000gm
	C	25th Day	8.3	18	1000gm	1000gm
SECOND-80 Days (22/4/23)	A	39thDay	26	2	0.233gm	999.767g
	B	55th Day	5.66	7.33	0.116gm	999.884g
	C	53th Day	3	11	0.122gm	999.87g
THIRD-120 Days (1/6/23)	A	46thDay	28	6.33	0.545 gm	999.45g
	B	78th Day	5.33	11	0.436gm	999.54g
	C	77th Day	4.33	18	0.422gm	999.53g

GroupA- Only sample (Oryza sativa L.)Group B-sample with Musta tablet; Group C- Sample with parad tablet

Weight loss:

After removing the beetles from each jar, the weight of seeds were taken separately on a single pan electric balance for each replicate after one, two, three months. The percent loss in weight due to insect damage was calculated by using the following formula [11]

% loss weight I-F X100

Where, I

I = Initial weight of seeds, F = Final weight of seeds

4. Results

In India grain production has increased but Postharvest losses account for about 10 per cent of the total food grains due to improper storage insects, rodents, micro organisms etc[12]. There for grain storage play an important role in preventing the loss due to insects, rodents, and other microorganisms. Chemical are still used for storage of grains which are unsafe, so low cost and effective method is required to preserve grains safely and long period of time[12,13]. To overcome from that side effect of synthetic pesticides , use tradition medicine for the preservation of food grains.To check the efficacy of Taditional medicinal plant like *Musta (Cyperus rotundus* Linn.) is required in preservation of Brown rice (*Oriyza sativa* L.) which shelf life is 6 month[14], *Musta* (*Cyperus rotundus* Linn.) commonly known as *Motha* is found throughout India. It belongs to the family Cyperaceae. The genus name Cyperus is derived from Cypeiros, which was the ancient Greek name for the genus, rotundus is Latin word for round and refers to the tuber. There are several researchers demonstrated the effectiveness of plant oils and powders in controlling insect or preservation .*Musta* powder at 50gm dose in 1000gm of brown rice gave efficient result of preservation 40,80,120 days treatment of stored rice.During every observation live and dead both insects were removed. As there is a amount of dead insect is less around 20% in musta group and Parad tablet has>25% effect. But the infestation days of insect is longer than ,which shows considerable result in preservation , the residue value of *Musta* and parad was almost same, so there was a successful observational study that indicate Ayurved natural preservative effect (*samrakshan property*). Further studies should be conducted to explore the potential of the herbal preparations with more possible combinations and doses to control storage insect pests at domestic level without any adverse effects on the quality of food grains.[15]

Refrences

[1] CONCEPT OF S AHARA IN AYURVEDA.
[2] Chandrasen kumar, C. Warehouse Storage Management of Wheat and Their Role in Food Security.
[3] Kaliamurthi, S. Synergism of essential oils with lipid based nanocarriers: emerging trends in preservation of grains and related food products. Grain & Oil Science and Technology. March 2019,;3Volume(1).
[4] Mohammed khalid, K. Antimicrobial Activity of Cyperus rotundus Linn Extracts and Phytochemical Screening. Eurasian Journal of Science and Engineering. December 2017;3(2414-5629):
[5] Janaki , S. Chemical composition and insecticidal efficacy of Cyperus rotundus essential oil against three stored product pests. International Biodeterioration and Biodegradation Society. September 2018;
[6] Kamala, A. In vitro Antioxidant Potentials of Cyperus rotundus L Rhizome Extracts and Their Phytochemical Analysis. Pharmacogn Mag 2018. 2018 ;14(45231
[7] Ping hu, Q. Chemical Composition, Antioxidant, DNA Damage Protective, Cytotoxic and Antibacterial Activities of Cyperus rotundus Rhizomes Essential Oil against Foodborne Pathogens. Scientific Reports volume . March 2017;7(45231):
[8] Pirzada, M. Cyperus rotundus L: Traditional uses, phytochemistry, and pharmacological activities. J Ethnopharmacol. NOV 2015;4(3)
[9] Shree Bapalal g. vaidya, nighantu adarsh, chaukhambha bharati academy, varanasi, vol.2, reprint 2018, apamarg adi varga, pg. 707
[10] Ayurvedic Formulary of India. Govt. of India, Ministry of health & family welfare, department of ism & h., part 1. second edition, pg 103.
[11] EFFICACY OF SOME BOTANICALS AGAINST PULSE BEETLE,CALLOSOBRUCHUS CHINENSIS (L.) IN CHICKPEA.
[12] Swamy, G. Postharvest Management Practices of Grains in the Eastern Region of Kenya . Journal of Agricultural Science. February 15, 2019 ;11(3).
[13] Mobolade, A. Traditional methods of food grains preservation and storage in Nigeria and India. Annals of Agricultural Sciences. December 2019;Volume 64(2).
[14] Ayurvedic formulary of india. govt. of India, ministry of health & family welfare, department of ism & h., part 1. second edition, pg 103.
[15] Swamy, G. Evaluation of Herbal Tablets against Red Flour Beetle, Tribolium castaneum (Herbst) in Brown Rice. Ann Pl Protec Sci . 2021;28(2).