

AN OPEN LABELED, TWO ARMED, PROSPECTIVE RANDOMIZED CONTROLLED, PHASE 2, CLINICAL STUDY TO EVALUATE NUTRITIONAL & HEALTH CARE VALUE OF AYURVEDIC BISCUIT IN CHILDREN.

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Abstract:

Malnutrition is a broad term which refers to both under nutrition and over nutrition. Both are major problem on all over the world. Under nutrition occurs when an individual does not consume enough food. Junk food, maida biscuits, chocolate, etc. which children like to eat usually are dangerous regarding health aspects. Junk food items can stop your child crying because of taste but can not be good for children's health . These can causes various health problems in these children like oral hygiene, tooth decay, constipation, loss of appetite, worm infection etc.This all above problems were overcome by simply preparing (homemade) ayurvedic biscuits which are made up of Nagli,Wheat, Sugar,Gogrut, Ashwagandha, Shatavari, Vidarikanda, Vidang, Bramhi, dry ginger etc. which have not only nutritious value but also good medicinal valuable products which are good for complete physical and mental growth of children overall.

Key Word: Ayurvedic Biscuits, Health tonic,Brain tonic,Good appetizer , Krumighna.

Introduction :-

We need a new definition of malnutrition. Malnutrition means under & over nutrition .Malnutrition means emaciated & obese. Both are major problem on all over the world We have noted severe malnutrition in some children & are worried of further deterioration of the children's nutritional status. We are definitely in an emergency situation. Hunger & malnutrition have devastating consequences for children & have been linked to low birth weight & birth defects.Obesity, mental & physical health problems ,poorer educational outcomes. Our foremost priority is the removal of poverty, hunger & malnutrition, disease &

literacy. Under nutrition occurs when an individual does not consume enough food. It may exist if the person has poor diet that gives them the wrong balance of basic food groups. Obese children who consume more calories than they need, may suffer from malnutrition, if their diet lacks the nutrients their body needs for good health. Children who eat fast food, this high calorie, high fat, less fiber, low nutrient eating pattern is associated with undesirable weight gain, obesity. Generally the outside foods like junk food, biscuits, chocolate, etc. which children like to eat usually are dangerous regarding health aspects. These food items can stop your child crying because of taste but cannot be good for children's health as these can cause various health problems in these children like oral hygiene, tooth decay, constipation, loss of appetite, worm infection & so on.

This all above problems were overcome by simply preparing (homemade) ayurvedic biscuits which are made up of Nagli, Wheat, Sugar, Butter, Ashwagandha, shatavari, vidarikanda, vidang, bramhi, dry ginger etc. which have not only nutritious value but also good medicinal valuable products which are good for complete physical and mental growth of children overall. To prevent child malnutrition, all essential dietary factors should be provided through food items which children generally like eg. Biscuits so, these ayurvedic biscuits (contain all essential dietary factors like carbohydrate, fat, protein, iron, calcium, vitamins, etc.) are given to children aged 1-12 years 2 biscuits 2 times in a day for month. And these biscuits will help to maintain good health as well as brain tonic & immunity booster for this growing age children. The final aim of this project is not only to maintain good health but also to prevent common health related problems in children like constipation, loss of appetite, worm infestation, anaemia, tooth decay, as well as malnutrition in children by consuming these ayurvedic biscuits.

Aim:-To evaluate Nutritional & Health care value of Ayurvedic Biscuit in Children.

Objectives.-A.Primary:1] To compare the nutritional value of Ayurvedic Biscuit with existing market available Biscuit.

B.Secondary:1] To study acceptability & tolerance of Ayurvedic Biscuit.

2] To evaluate efficacy of Ayurvedic Biscuit as a health tonic & Brain tonic in children.

3] To evaluate efficacy of Krumighna (Deworming) effect of Ayurvedic Biscuit in children.

4] To evaluate efficacy of Ayurvedic Biscuit in children as a good Appetiser.

Hypothesis :

1]Ayurvedic Biscuit is effective as Health tonic,Brain tonic,Good appetizer & Krumighna effect in children.

2]Ayurvedic Biscuit is effective in maintaining Balaswasthya & safe for children.

Study Design:

Open labeled ,Two armed ,Prospective,Randomised controlled,Phase 2, Clinical study.

Material & Method:

Study was carried out in children in two different groups.

Each group consisting of 30 children.

1]Age Group:1 to 6 years.

2]Age Group:7 to12years.

Each age wise group having all type of children:

1.BMI(18.5-24.9) (Normal Weight)

2.BMI(<18.5) (Under Weight)

3.BMI(>25)(overweight)

Biscuits Prepared From:

Nagali , Wheat ,Shatavari , Vidarikand , Ashwagandha , Vidang , Bramhi Suntha ,Milk,Ghee.

Group A(study group):- Ayurvedic biscuits

Group B(control group) :- Market available biscuits.

Dose & Duration:- 2 biscuites twice a day for 1 month

Follow up:- 15 day

Subject Inclusion Criteria:-

Subject meeting all of the following criteria was included in the trial-

1. Subjects of either sex in the age group of 1 to 12 years, both inclusive
2. Subject having history of loss of appetite, worm infestation, constipation, etc

3. Subject willing to follow the procedure as per the study protocol & voluntary sign or informed consent form

Subject Exclusive Criteria:-

Subject meeting of any of the following criteria was excluded from the study-

1. Subject who are known case of disease like DM, Thalassemia, etc
2. Known case of sever/chronic hepatic or renal disease
3. Known case of any active malignancy.

Parameters Of Study:-**• Health Parameter:**

Parameter	D0	D15	D30
1.Weight(kg)			
2.Height(cm)			
3.BMI			
4.Waist Circumference			
5.Hip Circumference			

Appetiser Effect- Agni – Mand /Sama/ Vishma/Tikshna

Kshudha(Appetite)-Grade0-loss of appetite Grade1-Mild Grade2-Good Grade3- Stable appetite with usual moderate desire to eat

Parameter	D0	D15	D30
Kshudha(Appetite)			

Krumighna Effect:Krumi-1.Absent 2.Present(If present Symptoms of krumi- Nausea,Weakness,Diarrhoea,Abdominal pain,Hunger or Loss of appetite,Fatigue,Weight loss,White patches on face,Itching at anus.)

Parameter	D0	D15	D30
Krumi			

Memory Test: Short term memory test: By Picture Methods.

Parameter	D0	D15	D30
Memory Test			

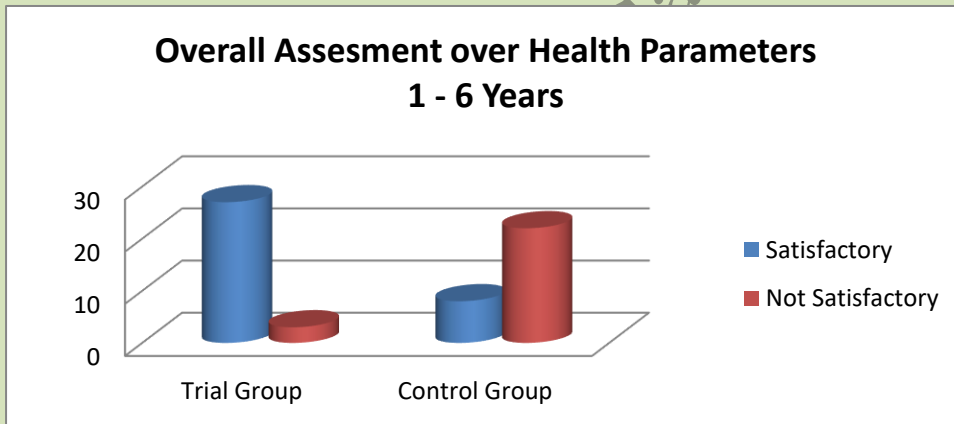
Observation

1. Health Parameters

A. Age Group 1-6 years

	Trial Group	Control Group
1-6 years		
Satisfactory	27	8
Not Satisfactory	3	22

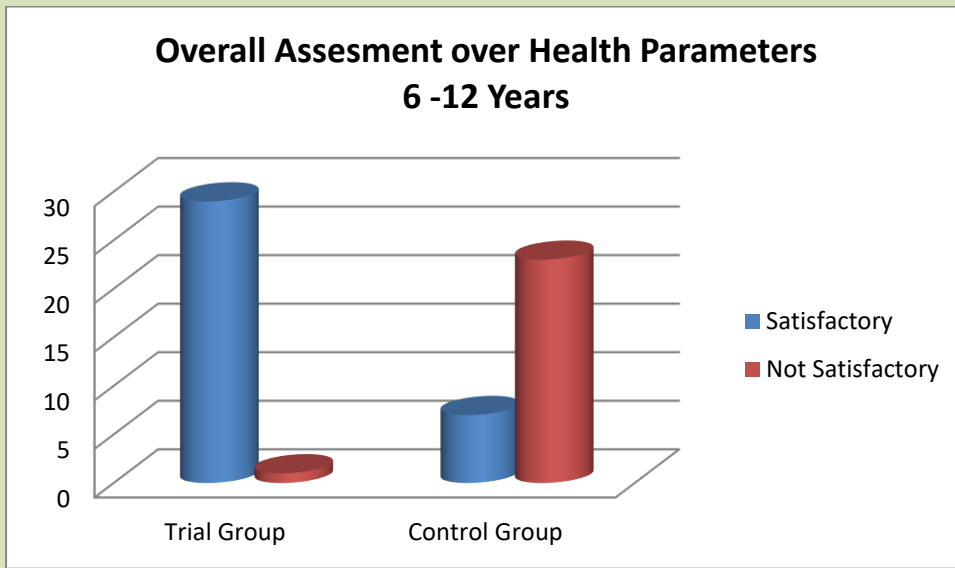
Chi square =24.75 .The result is significant at $p < 0.05$



B. Age Group 6-12 years

	Trial Group	Control Group
6-12 years		
Satisfactory	29	7
Not Satisfactory	1	23

Chi square =33.61 .The result is significant at $p < 0.05$

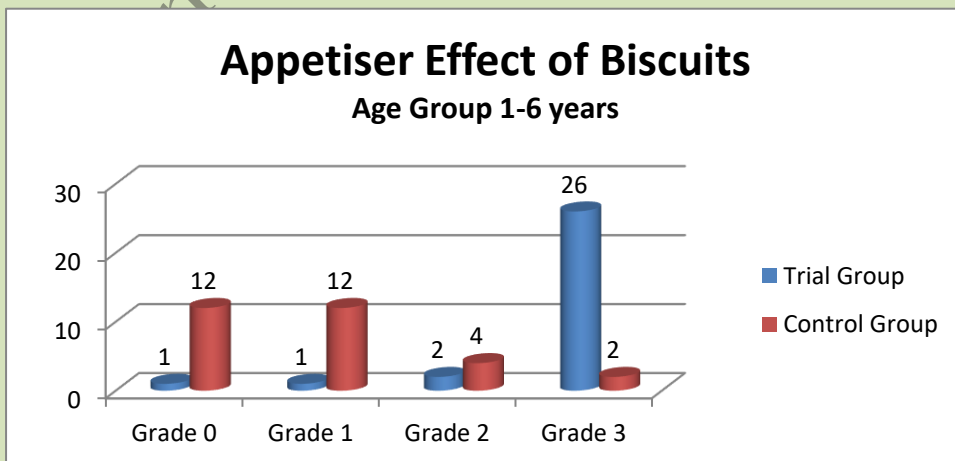


2.Appetiser Effect after Treatment in Both Groups

A.Age Group 1-6 years

	Trial Group	Control Group
Grade 0	1	12
Grade 1	1	12
Grade 2	2	4
Grade 3	26	2

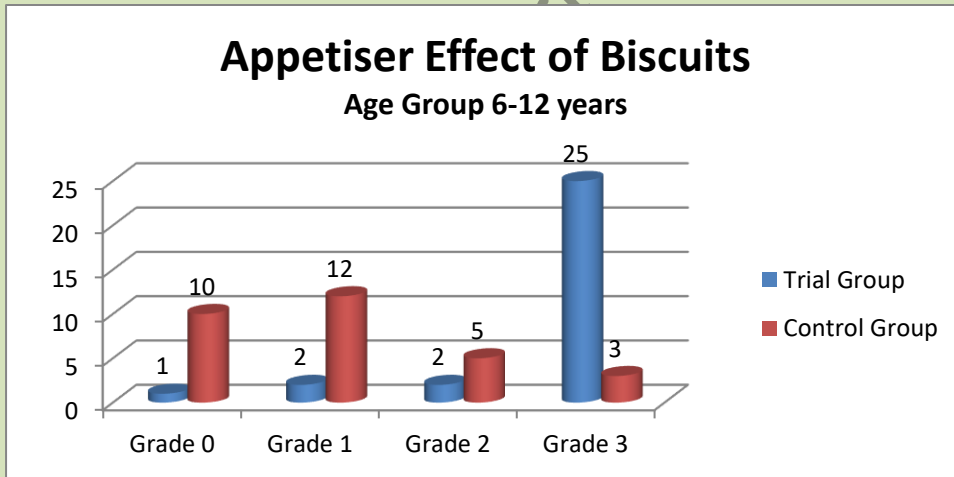
Chi square =39.85 .The result is significant at $p < 0.05$



B.Age Group 6-12 years

	Trial Group	Control Group
Grade 0	1	10
Grade 1	2	12
Grade 2	2	5
Grade 3	25	3

Chi square 33.07 = .The result is significant at $p < 0.05$



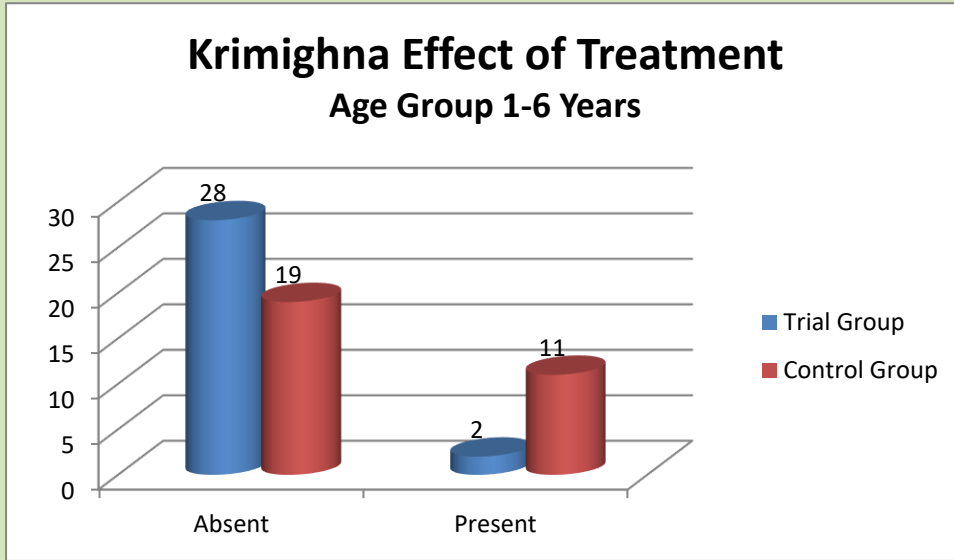
3.Krimighna Effect

A. Age Group 1-6 years

	Trial Group	Control Group
1-6 years		
Absent	28	19

Present	2	11
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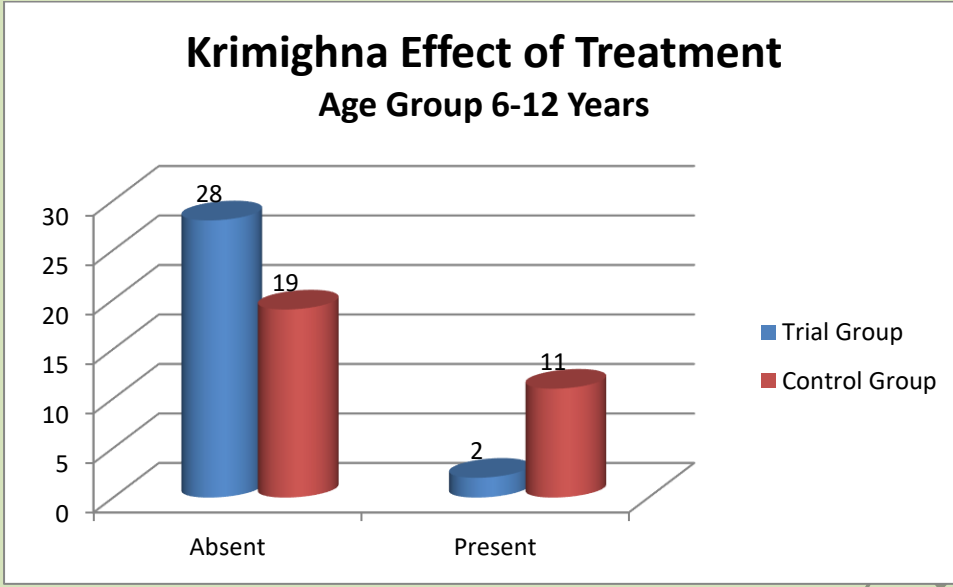
Chi square = 7.9 .The result is significant at $p < 0.05$



B.Age Group 6-12 years

	Trial Group	Control Group
6-12 years		
Absent	29	20
Present	1	10

Chi square = 9.01 .The result is significant at $p < 0.05$



Discussion-

SR. NO.	DRAVYA	LATIN NAME	RASA	VIRYA	VIPAKA	GUNA
1.	<i>Shatavari</i>	<i>Asparagus racemosus</i>	<i>Madhur, Tikta</i>	<i>Sheeta</i>	<i>Madhur</i>	<i>Guru, Snigdha, vrushya</i>
2.	<i>Ashwagandha</i>	<i>Winthania somnifera</i>	<i>Madhur, Tikta, kashay</i>	<i>Ushna</i>	<i>Madhur</i>	<i>laghu, snigdha</i>
3.	<i>Vidarikanda</i>	<i>Pueraria tuberosa</i>	<i>Madhur</i>	<i>Sheeta</i>	<i>Madhur</i>	<i>Guru, Snigdha</i>
4.	<i>Bramhi</i>	<i>Bacopa monnieri</i>	<i>Tikta, kashay, Madhur</i>	<i>Sheeta</i>	<i>Madhur</i>	<i>ruksha</i>

5.	<i>Vidanga</i>	<i>Embelia ribes</i>	<i>Katu</i>	<i>Ushna</i>	<i>Katu</i>	<i>ruksha, laghu, Ushna,tikshna</i>
6.	<i>Shunthi</i>	<i>Zingiber officinalis</i>	<i>Katu, Tikta</i>	<i>Sheeta</i>	<i>Madhur</i>	<i>laghu,snigdha, Ushna</i>

1.Nagali: *Elusine Coracana*

Also called Ragi or Nachani.It is rich in calcium used in bone development and in prevention of osteoporosis.It s rich in iron so used in anaemia.It is rich in vit.C which helps in easy iron absorption.This Ayurvedic Biscuits which contain 50% of Nagali,so very helpful to improve general health in children.

2.Shatavari: *Asparagus racemosa*

An Ayurvedic reviews,as mentioned in the 'Bhav Prakash' ,shatavari due to its sweetish taste(*madhur rasa*) and it's *madhur vipaka*.It has ability to work as *hridya, Rasayan*,and importantly it acts on *ras, mansa,shukra Dhatus*.Henceforth it increases the *Bala*(power)and hence shatavari is used as *Balya*.It's chemical constituents are Asparagamine,Polycyclic alkaloid,Saponins,immunosides,iron,calcium,carotene,vit.C etc.

3.Ashwagandha: *Winthania Sommnifera*

Ashwagandha due to it's *snigdha,sheet, madhur guna* acts on the *shukra dhatu* and nourishes it ,also as *dhatuyardhak*.Its chemical constituents alkaloids and steroidal lactones which includes tropine (anticholinergic).

4.Vidarikanda: *Pueraria tuberosa*

It has a *guru* (heavy) and *snigdha* (smooth)*guna* and it is *madhur*(sweet) in taste and *sheet virya* i.e. cool potency which tends to increase the *Bala*(power)/improvement of general health.It contains carbohydrate 64% and proteins 10.9% .

5.Bramhi: *Bacopa monnieri*

Bramhi acts as *medhya Rasayan*(brain tonic).As it nourishes the *majja dhatu*.Due to it's *laghu*(light)and *tikta*(bitter in taste)it decreases the mala (waste),*jadya*(heaviness)of *buddhi*.Hence it is use as Brain tonic.

6.Vidanga: *Embelia ribes*

This is best herb used for worm infestation that includes roundworm,threadworm and tapeworm.worm infestation is very common problem in children .So,this Ayurvedic Biscuits which contain *vidang* are very useful in children for deworming.After deworming, health improvement of children was observed.

7.Shunthi: *Zingiber officinalis*

Shunthi/suntha due to it's *katu,ushan,tikta guna* acts on digestive system,it digest the unprocesess food properly,it also acts as *dipan dravya* i.e. it acts on the *Agni* concepts of Ayurveda.So,this Ayurvedic Biscuits which contain shunthi are useful in improvement of digestion *or agni vardhan*.Stable appetite with usual moderate desire to eat is very helpful to maintain general health in children

Result and Conclusion :

1.Health improvement:As compared to market available biscuits Aurvedic Nagali biscuits have more nutritional and medicinal values and More useful as considered to Health parameters. And more important is these biscuits are not junk food.

2.Appetizer : Ayurvedic Nagali Biscuits are also useful to improve appetite by its *Agni vrudhikar* effect.

3.Deworming : Ayurvedic Nagli biscuits are also helpful in deworming due to natural deworming properties of it's contains. These biscuits are ultimately useful in improvement of health parameters.

Utility of Product :

- 1) We cannot resist kids from eating biscuits. Hence indirect complication of Market available biscuits, as a Junk food is avoided with use of Ayurvedic Nagli biscuits.
- 2) Malnutrition is biggest problem in world. These biscuits are useful in malnourishment control.
- 3) These Ayurvedic biscuits are useful as appetizer, Brain tonic, and health parameters improvement

Benefit to society

- 1) Reduction of Malnourishment in society.
- 2) Healthy and Genius India.
- 3) No compromise with kids taste.



References:-

1. heathyeating.sfgate.com-Deterimental effects of fast food on children.
2. Excessive weight gain- Pediatrics- jan 2014
3. Study published in child : Care , Health, Development- Nov 2011
4. International Journal Of Home science 2016;2(3)68-70.
5. Bhavprakash Nighantu and Shri Bhramhashankar Shastri Vidyotini Hindi Vyakhya, poorvardha, Choukhamba Sanskrit Samsthan, Vranasi.

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