A Critical Review and Experimental Study on Samyoga Viruddha with Special Reference to Ksheera and Dadhi

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Abstract: Ayurveda the science of life is a time-tested treasure of knowledge that has been handed down to us from our great ancestors. For total positive health Ayurveda has given three sub pillars - Ahara, Nidra and Brahmacarya, which support the body itself, any sort of its vitiation directly affects the pillars (Tridoshas) themselves. Here Ahara has been enumerated first, which shows its importance. Food plays a decisive role in development, sustenance, reproduction and termination of life. Intake of unwholesome foods and drinks causes vitiation of bodily Doshas and Dhatus, hence causes diseases. When the laws of dietetic regimens are broken it leads to numerous diseases. The study design includes literal study, analytical study on free radical, experimental study by taking ten hematological & fifteen biochemical parameters, histopathological examination of internal organs for a period of 28 days. The effect of Viruddha Ahara is slow and spread over a long time that we fail to notice its effects in the body, so an animal experiment with subacute toxicity study was planned. Wistar strain rats of middle age were selected, grouped into two as control and test each containing six rats. Ksheera and Dadhi were given to Wistar rats for 28 days in the morning hours. Then the values were taken according to the parameters designed. The parameters were designed to evaluate the consequences of Ksheera and Dadhi as a Samyoga Viruddha by observing the changes in experimental study, hematological and biochemical parameters, gross behavioral changes, ponderal changes, food and water intake changes & behavioral changes. The Values were taken and analyzed statistically and compared to get the results. Antioxidant test using DPPH assay shows that the combination of curd and milk together will increase the level of free radicals in the body Thus overall analysis from experimental indicates the difference between normal and Viruddhahara group- which are not marked but significant enough to indicate the validity behind the concept of Viruddha Ahara.

Keywords: Incompatible Food Combinations, Samyoga Viruddha, Ksheera (Milk), Dadhi (Yogurt).

1. INTRODUCTION

Food is the basic requirement for man and is the source of nutrients.When food is consumed according to the dietetic laws, it bestows health.Ahara is one among Traya Upasthambha[1].

Indulgence in Viruddha Ahara may be the causative factor for all the Nindita Vyadhi[2].

Go Ksheera and Dadhi are considered as Shreshta, but Samyoga of these act as Viruddha[3].

These two are easily available and can be taken as a routine food item.By keeping these facts in mind the study titled “A CRITICAL REVIEW AND EXPERIMENTAL STUDY ON SAMYOGA VIRUDDHA WITH SPECIAL REFERENCE TO KSHEERA AND DADHI” was designed.

Concept of Viruddha Ahara

The term Viruddha is formed from the root "Rudhir" "Avarane"which means “Virodha Vishesha” i.e. contrast or opposition in particular.

Lakshanas[4]

- That which acts antagonistic to the Deha Dhatus (tissues of the body) is known as Viruddha.
- The drugs and diets that dislodge the Doshas but do not expel them from the body are regarded as unwholesome.
- Drugs and diets which are unwholesome for the normal Dhatus and Doshas of the body, are in fact opposed to their proper growth wherein some act due to their mutually contradictory qualities; some by combination; some by the method of preparation; some by the virtue of place, time and dose and some others by their inherent nature.

Types of Viruddha[5]

Acharyas have classified Viruddha Aharas into different types based on many factors.

Acharya Charaka has classified Viruddha Aharas into 18 types Viz.,

1. Desha Viruddha
2. Kala Viruddha
3. Agni Viruddha
4. Matra Viruddha
5. Satmya Viruddha
6. Dosha Viruddha
7. Samskara Viruddha
8. Veerya Viruddha
9. Koshta Viruddha
10. Avastha Viruddha
11. Krama Viruddha
12. Parihara Viruddha
13. Upachara Viruddha
14. Paka Viruddha
15. Samyoga Viruddha
16. Hrudaya Viruddha
17. Sampat Viruddha
18. Vidhi Viruddha

Tridosa vitiation by Viruddhahara[6]

Astanga Hrudaya has stated that by intake of Viruddha Ahara all three Dosas get provoked.

KSHEERA : Ayurveda has given a very important place for cow products in both ahaara dravyas and Aushadha Dravyas. Very extensively used cow products are milk and curd. Ksheera (milk) is wholesome for all the living beings from birth itself (Jatisatmya)[7].

DADHI : Ayurveda has given great importance in the usage of Dadhi both as Oushada and Ahara. Lot of Ahara prayogas using Dadhi are mentioned in various classical text books. Different types of Dadhi has been mentioned by Acharyas and considering Dosha vitiation one can wisely select it. While mentioning Patyapatya of diseases also Acharyas had given an important place for Dadhi.

Rasa Panchakas [8] [9] [10]

Rasa : Amla Rasa, Kashaya Anurasa, **Guna** : Guru, Snigdha, **Veerya** : Ushna, **Vipaka** : Amla, **Karma** : Vatajith, Medhakrith, Shuklakrith, Balya, Deepana,Grahi ,Vrishya ,Pranakara Mangalya.Brimhana

2. MATERIALS AND METHODS

The present study was carried out in two stages :

1. Literary study.
2. Pharmacological study.

1. LITERARY REVIEW : Source of data: Review of all the classical literature bearing description of Viruddha Ahara and Samyoga Virudha with special reference to Ksheera and Dadhi. Articles from journals and other published works. Related source of data from the website.

Methodology : Present study is a literary based experimental study and method was followed as per the objectives of the study. Here relevant literary references were compiled from different classical texts and commentaries and sorted in order to generate the review, so as to fulfill the aims according to the objectives.

2. EXPERIMENTAL STUDY : The aim was to evaluate the consequences of Ksheera and Dadhi as a Samyoga Viruddha by observing the changes in experimental study, haematological and biochemical parameters for 28 days.

Experimental source: Wistar strain rats taken from the Animal House of S.D.M. Center for Research in Ayurveda & Allied Sciences, Udupi.

Test drugs: Dadhi – freshly prepared. Ksheera – boiled and cooled.

Method of collection of data

Wistar strain albino rats of young age (3-5 week of age), weighing between 150 ± 50g from the Animal house attached to SDM- Centre for Research in Ayurveda and Allied Sciences- Udupi will be selected. Selected rats shall be randomly placed under 2 groups, so in each group a minimum of 6 rats will be included. The rats will be maintained in the cycle of 12 hours (light & darkness) with a temperature and humidity-controlled environment. The relative humidity 50-55% would be recorded and the ambient temperature would be maintained around 22 ± 02º C during the time of experimentation. Food supply of rats will be done with standard food pellets and water will be given. The parameters were designed to evaluate the consequences of Ksheera and Dadhi as a Samyoga Viruddha by observing the changes in experimental study, hematological and biochemical parameters, gross behavioral changes, ponderal changes, food and water intake changes & behavioral changes

Duration of the Study : Duration of administration - 28 days

Inclusion Criteria

1. Healthy Wistar strain rats of either sex.
2. Wistar strain albino rats weighing between 150 ± 50g.

Exclusion Criteria

1. Wistar strain albino rats weighing less than or more than 150 ± 50g.
2. Pregnant and diseased rats.
3. Rats used for and under trial of other experiments.

Dose Calculation: The dose of the formulations were calculated by extrapolating the therapeutic dose to rat dose on the basis of body surface area ratios (conversion factor 0.018 for rats) by referring to the table of 'PAGETS AND BARNES' 1964.

Statistical analysis: The data obtained were analyzed using paired 't' test for determining the level of significance of the observed effects. A 'p' value of less than 0.05 was considered as statistically significant.

3. OBSERVATIONS AND RESULT

- **Effect of Go- Ksheera and Dadhi on hematological parameters in rats:**

The data shows there was an increase in levels of Haemoglobin, RBS, WBC, PCV, MCV, MCH,MCHC and Platelets in the Dadhi & Go-Ksheera group when compared with the control group. The observed effect was found to be statistically significant.

- **Effect of Go- Ksheera and Dadhi on Biochemical parameters in rats**

The data shows there was an increase in SGOT, total protein level, urea, serum triglyceride, HDL,LDL, Uric acid, serum bilirubin and decrease in serum sugar, albumin, creatinine, ALP, SGPT, in Dadhi & Go-Ksheera group when compared with control group. The observed effect was found to be statistically highly significant.

- **Effect of Go- Ksheera and Dadhi on Organ weights in rats**

The data shows there was marginal and statistically non-significant increase in weight of lungs, heart, liver, stomach, kidney, uterus, jejunum and decrease in weight of brain in Dadhi & Go-Ksheera group when compared with control group

- **Body Weight Changes of albino rats**

The data shows there was an increase in body weight in7th day, 14th day, 21st day and 28th day of the control group when compared with the initial body weight of the control group.

- **Effect of Dadhi & Ksheera on food intake of rats in 3 weeks**

The data shows there was a decrease in food intake of rats on the 7th, 14th and 21st days of the Dadhi & GoKsheera group when compared with the control group. The observed effect was found to be statistically non-significant

- **Effect of Dadhi & Ksheera on fecal wet weight of rats in 3 weeks**

The data shows there was an increase in fecal wet weight of rats in 7th & 21st day and decrease of the same in 14th day of Dadhi & GoKsheera group when compared with control group. The observed effect was found to be statistically significant.

- **Effect of Dadhi & Go-Ksheera on rats in 1 week assessment of food intake**

The data shows there was a decrease in food intake in the Dadhi & Go-Ksheera group when compared with the control group. However, the observed decrease was found to be statistically non significant.

- **Effect of Dadhi & Go-Ksheera on Gross behavioural changes in rats**

SIGNS & SYMPTOMS	Basal	30min	1h	2h	3h	4h	24h	After 1WK
General Impression	N		ACTIVE 4/8	ACTIVE 1/8	ACTIVE 1/8	ACTIVE 3/8	ACTIVE 1/8	ACTIVE 2/8
Increased motor activity	-		-	-	-	-	-	-
Convulsion: Tonic	-		-	-	-	-	-	-
Clonic	-		-	-	-	-	-	-
Straubs reaction	-		2/8	2/8	2/8	4/8	-	-
Muscle spasm	-		-	-	-	-	-	-
Catatonia	-		-	-	-	-	-	-
Opisthotonus	-		-	-	-	-	-	-
Hyperaesthesia	-		-	-	-	-	-	-
Decreased motor activity	-		-	1/8	1/8	2/8	1/8	-
Muscle relaxation	-		-	-	-	-	-	-
Anaesthesia	-		-	-	-	-	-	-
Arching and rolling	-		-	-	-	-	-	-
Lacrimation	-		-	-	-	-	-	-
Diarrhoea	-		-	-	-	-	-	-
Writhing	-		-	-	-	-	-	-

Salivation	Viscid	N		N	N	N	N	N	N
	Watery								
Respiration	Stimulation	N		N	N	N	N	N	N
	Depression								
	Failure								
Skin colour	Blanching								
	Cyanosis	N		3/8	N	3/8	2/8	1/8	1/8
	Vasodilatation								
Crip strength		N		N	N	N	N	N	N
Visual placing response		N		N	N	N	N	N	N
Tail pinch response		N		5/8	7/8	7/8	7/8	7/8	7/8
Auditory response		N		N	N	N	1/8	N	N
mucus membrane		N		N	N	N	N	N	N
Piloerection		N		N	N	N	N	N	N

Histopathological Examination

Microscopic examinations of sections of liver,heart, kidney, testes, uterus, brain, stomach, lungs and spleen from control and test group (Viruddhahara group) were carried out.

LIVER- Sections from five rats exhibited normal cytoarchitecure.In the sections from one rat- mild fatty changes were observed.

HEART- In test drug administered group moderate myocarditis was observed in sections from one rat while the remaining 5showed normal cytoarchitecture.

KIDNEY- Microscopic examinations of sections of kidneys from control and test group was carried out. In the test group sections from four rats exhibited normal cytoarchitecure. In sections from two rats- mild to moderate fatty degenerative changes were observed in the tubular epithelium

TESTIS- Normal cytoarchitecture of testis was observed in sections obtained from normal control group. In testis sections from test group normal cytoarchitecture was observed. Spermatogenesis was found to be moderate in 3 rats and good in the remaining 3 rats.

UTERUS- Microscopic examination of sections of uterus from both test drug and control group rats was carried out. In both the groups rat uterine sections with normal cytoarchitecture and features of moderate activation was observed.

BRAIN- No difference could be observed between control and test groups.

STOMACH- No change was observed in any of the sections scanned under microscope.

LUNGS- Microscopic examination of sections of lung from the test drug administered group showed normal cytoarchitecture in sections from 5/6 rats. In one rat mild fluid and cell effusion was observed.

SPLEEN- Microscopic examination of sections of spleen from the test drug administered group showed normal cytoarchitecture with mild increase in white pulp proportion in sections from 2 rats; in sections from one rat marked increase in white pulp proportion was observed.

4. DISCUSSION

In the present study the Virudha especially the Samyoga Virudha effect of Ksheera and Dadhi is evaluated through the experimental study.Viruddha Ahara is similar to Visha[7] in terms of the effects it produces in the body. A person who regularly follows a diet which is marked by Virudhashana ,Adhyashana,or Ajirnashana ultimately reaches to a stage of Ama Visha which is as fatal as any other Visha.Viruddhahahara has to be studied in lines of Visha i.e., it can cause immediate death as that of Tikshna Visha or produces a devastating diseases as that of Gara and Dooshi

Visha. The Viruddhaharajanya Rogas has been classified based on the vitiation of Agni,Dosha,Dhatu, and Srotas involved.

The research in this field is in the early stages and much is still unknown about this area of nutrition. However, as researchers learn more, they will have a better understanding of the best dietary recommendations to reduce the risk of disease and improve health.

A number of dietary components exert their beneficial effects on human health by modulating the expression of genes involved in the pathogenesis and/or in the protective mechanisms relative to epidemiologically relevant diseases (e.g., cancer, cardiovascular diseases).Apart from all biochemical effect of Viruddha Ahara, food substance which is not liked by the person leads to Viruddha Ahara. This may lead to continual maldigestion too. Charaka has also mentioned that those people who are able to digest Viruddha Ahara properly, who exercise very regularly, who are young and have a very good status of Agni can consume Viruddha Ahara.

Viruddha aharas are region specific. A screening of viruddha ahara data is the need of the hour for every region. Works in this direction may provide immense potential to prevent diseases;and also may become a guiding tool for all government sponsored programs like mid- day meals etc. To bring to the limelight, enough scopes are there to validate viruddha ahara concept on documentary based evidence. Steps in this direction will help appreciation even globally.

5. CONCLUSION

1. The concept of Anna rakshana was most prevalent since Veda kala and the concept of Viruddha Ahara was well established during Samhita kala,
2. Acharya Charaka explained seven & eighteen types of Virudha under Athreya Bhadrakapiya Adhyaya, Acharya Susrutha mentioned under Hitahitiya Adhyaya. Ashtanga Samgraha has mentioned in Viruddhanna Vijnaneeya Adhyaya, Ashtanga Hridayakara explained the same in Annaraksha Adhyaya, here concept of Virudhanna mentioned along with description of trayopasthambha .
3. Viruddhahara is that which acts like Gara visha. The Vairodhika lakshana of Ahara has explained that, ahara i.e. samavayi karana which act contrary to deha dhatus behave with virodha (antagonistic) to them. This antagonism may be in terms of guna, samyoga, samskara, desha, kala, matra etc. or swabhava plays the role of nimitha karana here.
4. Charakacharya has mentioned samyoga as one among the 18 types of viruddhahara, - asamavayi karana which will cause many diseases and even death
5. Antioxidant test using DPPH assay showed that the combination of curd and milk (69.01%) will increase the level of free radicals in the body than the individual curd (63.51%) and milk (55.27%).
6. Among the hematological parameters studied, there was slight increase in Total count, MCV, MCH, RDW SD & RBC which was statistically non significant, but there was statistically significant increase in HB% & PCV.
7. Among biochemical parameters studied, SGOT, Urea, Serum Creatinine, HDL, Uric Acid showed statistically significant increase. 8. Weekly assessment in the body weight changes of the test group compared to the control group there was a marked decrease in this increasing gradient in the test group.
8. Weekly assessment on the effect on fecal water shows non significant increase in fecal water among the test group on 7th, 21st & 28th day when compared to the control group.
9. Effect on food conversion ratio shows a significant decrease in the food conversion ratio in the test group. On 14th, 21st and 28th day when compared to the control group.
10. In conclusive observation was noted in histopathological examination of the test group which may happen by chance i.e. a rat was found with fatty liver changes, mild myocardities in one rat, further in two rats mild to moderate fatty changes in kidney and one rat was found with fluid effusion. The noticeable change observed is in spleen, in which mild to moderate increase in white pulp proportion.

11. Thus overall analysis indicates the difference between normal and Viruddha Ahara group - which are not marked but significant enough to indicate the validity behind the concept of Viruddhahara.

12. Hypothetical reason for the experimental observation may be because of the duration of the study; the study period was restricted to four weeks whereas, effect of viruddhara may require long period of etiological exposure to get expressed.

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