



Clinical Research

Observations on *Vamana* procedure in healthy volunteers

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Abstract

Vamana Karma is one of the five *Pradhana Karmas* of *Panchakarma* which is successfully used in treating *Kaphaj* disorders. *Panchakarma* is also indicated in healthy states. (C.Su. 16/13-16) for *Shodhana*. Textual references are available in Ayurvedic classics, but the procedure needs to be validated in the modern times when *Ahara Shakti*, *Bala* and *Agni* of the individuals have decreased considerably. So the effect of procedure was observed in 30 healthy volunteers of age group 18 to 60 years. *Lakshanik*, *Vaigiki*, *Maniki* and *Antiki Shuddhi* were observed and vomitus was analyzed macroscopically, microscopically and chemically.

Key words: *Agni*, *Ahara Shakti*, *Bala*, *Kaphaj* disorders, *Panchakarma*, *Shodhana*, *Vamana Karma*

Introduction

Panchakarma is an important component of Ayurvedic treatment, which eliminates vitiated *doshas* from the body. *Vamana*, a *Pradhana karma* of *Panchakarma*, is an important *Samshodhana* procedure (bio-cleansing method) recommended for cleansing of *bahudoshas*.

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 fiMdk dB dMral Hoks/jfrjs pA
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 cgqkL; fyxlfu rLeSl åkkuafgrAA
 p- l w16 /13-16^[1]

In modern times, *Ahara*, *Agni*, *Bala* and *Vyayama Shakti* of the individuals have diminished considerably. So it is worthy to observe the *Vamana* procedure in modern times in normal healthy individuals.

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Thus keeping in view the above facts, the intake and output of fluid, the *vegas* of *Vamana*, the duration of the procedure (*Vaigiki shuddhi*, *Antiki Shuddhi*, *Maniki shuddhi* etc.) were studied in the present study.

Materials and Methods

The present study was carried out at *Ayurveda* Central Research Institute, Delhi in collaboration with Dept. of Physiology, AIIMS on 30 apparently healthy volunteers between the age group of 18 and 60 years.

Inclusion criteria

- Apparently healthy volunteers
- Age group: 18 years to 60 years

Exclusion criteria

- Patients of hypertension, diabetes, renal diseases, peptic ulcer, jaundice, acute infections, dehydration and other chronic diseases which are contraindicated for *Vamana Karma* as detected by clinical history/investigations.
- Age group: Less than 18 years and more than 60 years
- Patients with lactose intolerance
- Pregnant/lactating women

Procedure adopted

Volunteers' written consent in Hindi was taken and information about the study was provided in information sheets on the '0' day. Physical examination along with physiological parameters assessment was done before, during and after *Vamana*. Routine haematological investigations were done before *Vamana* to exclude underlying pathology, if any.

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SOP for Snehapana

For the procedure, apparently healthy individuals were subjected to *Snehapana* with slightly warm non-medicated mother dairy ghee in milk or *Khichari* or *dalia* in the morning for three to seven consecutive days till complete *Snehana* was achieved since most of the volunteers were not ready to take *Acchha Snehapana* (A.H.Su.16/16).^[3] *Sneha* was given in following doses:

First day - 50 ml

Second day - 100 ml

Third day - 150 ml

Fourth day - 200 ml, and so on, not beyond seven days

Snehapana was continued for minimum three to maximum seven days as per the digestive capacity (*Agnibala*) of the volunteers in increasing doses. Some *Mridukoshthi* or *Sukumara Prakriti* volunteers were not able to take 50, 100 and 150 ml *Ghrita* as they complained of nausea, loose motion, heaviness and loss of appetite. In such volunteers, the dose of *Snehapana* was given up to their tolerance and recorded. However, in normal conditions, the appearance of fats in the stool was considered as the end-point of the *Snehapana* procedure (*Samyak Snigdha Lakshanas*).^[4]

After *Snehapana*, the volunteers were given *Abhyanga* for 15 or 20 minutes (with *Mahanarayana taila* IMPCL). Duration of massage was decided according to *Ahara-Shakti* and *Vyayama-Shakti* of the volunteers. Thereafter, *Bashpa swedana* (plain water steam) was given for 10-15 min (according to the *bala* of the volunteers). Most of the volunteers were given *Kapha bahula* diet on the day prior to *Vamana* e.g. *daliya* or *kheer*.

On the *Vamana* day in the morning, the volunteers were given *Madhuyashti Kwatha* mixed with equal quantity of boiled and cooled (37-40°C temperature) milk up to patient's satisfaction. The 2-4 g *Madanphala* (*beej-majja powder*) with honey was given for licking. Usually, the patients started instantaneous vomiting or vomiting within 15-20 min after the completion of the fluid intake. The emesis continued in bouts. The vomitus of first bout, second bout, third bout and so on was collected in separate graduated plastic transparent jars. The physical and chemical examinations were carried out on vomitus. The details of *vamaka dravya* studied are given in the Tables 1-5.

Analysis and TLC of *Madhuyashti choorna* and *Madanphala choorna* were done.

SOP for preparation of Madhuyashti Kwatha

The 60 to 75 g of coarse *Madhuyashti* (*Glycyrrhiza glabra*) root was boiled with 3 l of water to leave *Chaturthamsha* i.e. 750 to 1000 ml of decoction. This decoction was added to equal quantity of boiled and cooled mother dairy full cream milk. *Saindhava salt* 5 g was added to this mixture.

Paschat Karma

Complications if any were managed and recorded. Emergency medicine and ORS was kept ready to deal with any emergency.

The patient was advised to take *Shikanji* (i.e. water 250 ml,

Table 1: Details of milk (full cream – mother dairy) used

Nutritional information per 100 ml	
Energy	89 Kcal
Protein	3.3 g
Carbohydrate	5.1 g
Fat	6.2 g
Calcium	150 mg

Table 2: Details of ghee (mother dairy) used

Nutritional information per 100 g	
Energy	896 Kcal
Protein	0 g
Carbohydrate	0 g
Fat	99.5 g

Table 3: Mahanarayana Taila used

Parameters	
Iodine value	100.85
Saponification value	182.21
Acid value	3.15
Refractive index	1.4661
Moisture content	0.355% w/w
Microbial contamination	
Total bacterial count	Nil
Total fungal count	3.3 × 10 ³
Enterobacteriaceae	Nil
Salmonella species	Nil
Staphylococcus	Nil

Table 4: Honey

Parameter	
Reducing sugars (% w/w)	76.39
Total sugars (% w/w)	79.15
Loss on drying at 102°C (%w/w)	16.4

Table 5: Saindhava lavana

Parameter	
pH (10% of aqueous solution)	6.9
Bulk density	0.83
Tap density	1.25
Loss on drying at 105°C	0.27
Ash content (% w/w)	98.41
Acid insoluble ash (%w/w)	3.69
Water soluble extractive (%w/w)	95.89
Estimation of sodium by flame photometer (%w/w)	41

sugar 25 g, lemon half and salt 2 g) after some time so as to provide natural ORS and instant energy. Later *Khichari* (thin gruel made with *moong daal* and *rice*) was given at *Ahara Kala*. On the next *Ahara Kala*, normal *Khichari* was given. Adequate rest was advised to the patient. After one to two days, the volunteers switched on to normal diet.

Observations

The *Vaigiki Shuddhi* (number of bouts), *Antiki Shuddhi* (end point of *Vamana*) and *Maniki Shuddhi* (volume of vomitus in each bout) and *Lakshanic Shuddhi* (symptoms of proper cleansing) were assessed.

Macroscopic examination of *Vomitus* included quantity, colour, consistency, pH, specific gravity, presence of mucus and blood in the vomitus. The *vomitus* was microscopically examined for the presence of RBCs, WBCs, epithelial cells and parasites etc.

Chemical examination of vomitus included presence of bile salts, bile pigments and proteins.

It was observed that all the volunteers consumed 50 ml of *ghee* on first day. 11 volunteers consumed 50 ml of *ghee* on day II while 19 volunteers consumed 100 ml of *ghee* on day II. On day III, only six volunteers could consume 150 ml of *ghee* while 13 volunteers consumed 100 ml of *ghee* each as shown in the table. None of the volunteer could take *ghee* on day IV [Chart 1, Table 6].

The maximum time of *Abhyanga* (taken by seven volunteers) was 20 min and minimum time of *Abhyanga* (taken by 23 volunteers) was 15 min.

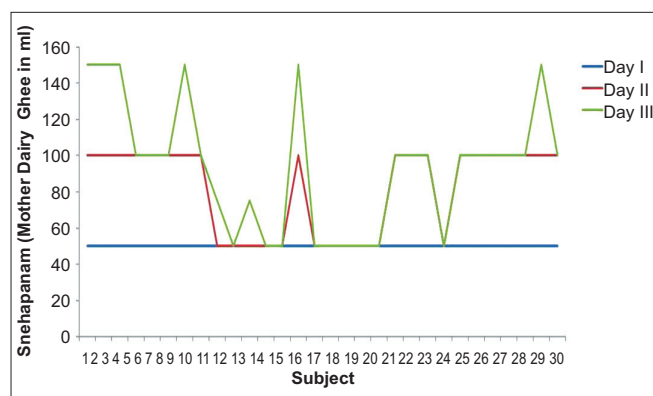


Chart 1: Line diagram showing the quantity of *ghee* intake on day I, day II and day III

Table 6: Quantity of *ghee* intake by volunteers during *Snehapana*

Quantity of ghee (in ml)	No. of subjects		
	Day I	Day II	Day III
50	30	11	9
75	0	0	2
100	0	19	13
150	0	0	6
Total	30	30	30

Table 7: Time (in min) of *Abhyanga* and *Svedana* before *Vamana*

<i>Abhyanga</i>	No. of subjects		Time (in min)
	<i>Abhyanga</i>	<i>Svedana</i>	
-		22	10
23		8	15
7		0	20
30		30	Total

The maximum time of *Svedana* (taken by eight volunteers) was 15 min and minimum time of *Svedana* (taken by 22 volunteers) was 10 min [Table 7].

In 66.7% of the volunteers, *Snehapana* was stopped due to the appearance of fats in the stools i.e. sticky stools as observed by the volunteers. However, in some volunteers, *Snehapana* was stopped because of loss of appetite, heaviness, nausea or both [Table 8].

It was observed that maximum no. of volunteers (27) consumed the fluid (milk and *Madhuyashti Kwatha*) within 5 min. Maximum time taken to consume fluid was 15 min and minimum time required to consume fluid was 1.1 min [Table 9].

It has been observed that 23 volunteers (76.67%) initiated the *Vamana* procedure within 0-4 min. The maximum time taken by the volunteers for initiation of *Vamana* after fluid intake was 10.45 min [Table 10].

The minimum time required to vomit the fluid was 3.02 min while the maximum time required to vomit was 31 min [Table 11].

Table 8: Symptoms to end *Snehapana*

End point of <i>Snehapana</i>	No. of subjects	Percentage
Appearance of fats in the stools	20	66.7
Heaviness	2	6.7
Nausea	1	3.3
Heaviness and nausea (both)	4	13.3
Loss of appetite	3	10.0
Total	30	100.0

Table 9: Duration of fluid intake in volunteers during *Vamana* procedure

Duration of fluid intake in minutes	No. of subjects
1-5	27
5-10	2
10-15	0
15-20	1
Total	30

Table 10: Time taken for *Vamana* initiation

Time taken for <i>Vamana</i> initiation in minutes	No. of subjects
0-4	23
4-8	3
8-12	4
Total	30

Table 11: Duration of *Vamana* process after drug intake

Duration of <i>Vamana</i> process in minutes	No. of subjects
3-13	21
13-23	8
23-33	1
Total	30

In maximum number of volunteers (66.7%), the Vamana procedure finished with Pitta (bile) in the vomitus. In 33.3% of volunteers, the Vamana procedure ended with Kapha (mucus) in the vomitus [Table 12].

The minimum number of bouts of Vamana was 2, while the maximum number of bouts was 4. However, the sub-bouts ranged from 4 to 8, as shown in Table 13.

1. Maniki Shuddhi (quantity of vomitus) as observed during Vamana procedure

In first bout, maximum quantity of vomitus was 900 ml.
In second bout, the maximum quantity of vomitus was 900 ml.

Table 12: Antiki Shuddhi as observed at the end of Vamana in volunteers

Symptoms at the end point of Vamana	No. of subjects	Percentage
Kaphanta (mucus at end)	10	33.3
Pittanta (bile at end)	20	66.7
Total	30	100.0

Table 13: Vaigiki Shuddhi (number of bouts and sub-bouts) as observed during Vamana procedure

Frequency of major bouts	Frequency of sub-bouts	Total no. of Vegas
3	3, 3, 2	8
3	2, 1, 2	5
4	2, 1, 2, 1	6
3	2, 3, 1	6
2	2, 2	4
2	3, 2	5
3	2, 3, 1	6
2	2, 2	4
4	2, 1, 1, 2	6
3	3, 2, 1	6
2	2, 1, 2	5
3	2, 2, 2	6
3	2, 2, 1	5
4	2, 2, 1, 2	7
3	2, 2, 2	6
4	2, 1, 2, 1	6
3	2, 2, 2	6
4	2, 2, 2, 1	7
3	2, 1, 1	4
3	2, 2, 2	6
4	1, 2, 1, 1	5
3	1, 2, 1, 1	5
3	3, 1, 2	6
3	2, 2, 1	5
3	1, 2, 1	4
3	2, 3, 1	6
3	2, 2, 1	5
2	2, 1, 2	5
3	2, 2, 2	6
4	1, 2, 2, 1	6

In third bout, the maximum quantity of vomitus was 350 ml.
In fourth bout, the maximum quantity of vomitus was 300 ml.

It has also been observed that maximum quantities of vomitus came out during first and second bouts [Chart 2].

Among 30 volunteers so studied, the maximum quantity of fluid taken was 2500 ml while maximum quantity of fluid output was 1700 ml. In all the volunteers, the intake of the fluid was a little more than the output [Table 14, Chart 3].

Examination of vomitus

(a) Macroscopic examination of the vomitus

- Color : Whitish in the first bout
Yellowish in the subsequent bouts
- Consistency : Initially clear
Shows precipitation after standing
- pH : 6-6.5
- Specific gravity : 1.03
- Mucus : Present in all bouts
Absent in few
- Blood : Absent in all samples

(b) Microscopic examination of the vomitus

Table 14: Quantity of medicated fluid intake and output

Quantity of fluid		Mean
Maximum intake in ml	2500	1486
Maximum output in ml	1700	879.33

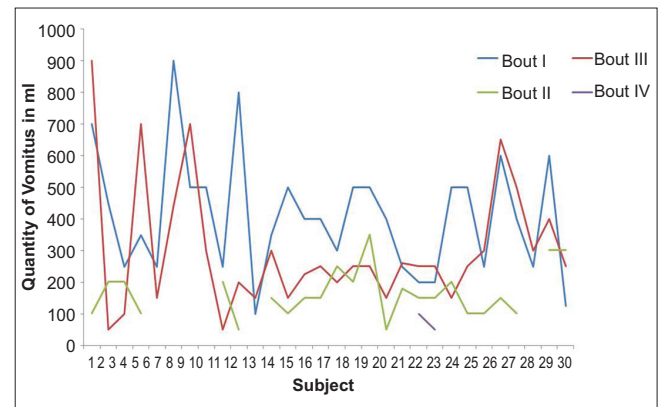


Chart 2: Line diagram showing the quantity of vomitus in various bouts

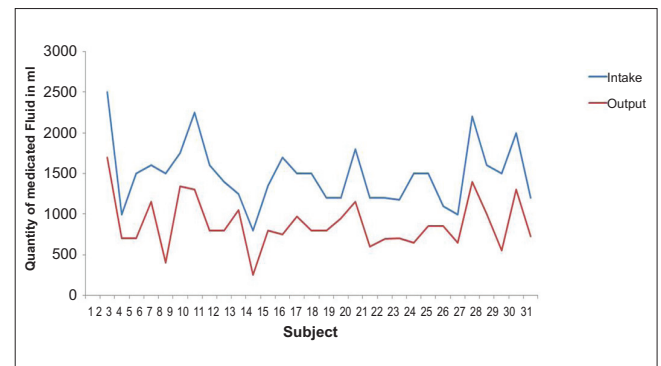


Chart 3: Line diagram showing the quantity of medicated fluid intake and output

RBCs	: Absent
WBCs	: Absent
Epithelial cells	: Absent
Parasites	: Absent
(c) Chemical examination of the vomitus	
Bile salts	: Present
Bile pigments	: Detected in some samples
Proteins	: 10-30 mg

Samyak Shuddhi Lakshanas as observed in the volunteers after Vamana:

1. *Vatanulomana* (passage of flatus)
2. Lightness of precordium
3. Lightness of the body
4. Happiness
5. Weakness

In 23.3% of the volunteers, all the above five *Lakshanas* were observed after *Vamana*. In 33.3% of volunteers, four of these *Lakshanas* were present. In rest of the volunteers, two to three of these *Lakshanas* were observed. *Vatanulomana* (passage of flatus) and lightness of the body were the most common *Lakshanas* observed in the volunteers after *Vamana* [Table 15].

In the present study, only one volunteer developed *Bhrama* (giddiness). No other complications were observed as such.

Discussion

Panchakarma procedures are in vogue since the practice of *Ayurveda*. With the changes in *Ahara*, *Agni*, *Bala* and *Vyayama Shakti* of the individuals in modern times, it has been important to validate the procedures. The present study was carried out on 30 apparently healthy volunteers, between the age group of 18 to 60 years to observe the *Vamana* procedure.

Volunteers with lactose intolerance were excluded as milk was used in this study. The pregnant and lactating mothers were also excluded from the study because of physiological variations and specified do's and don'ts for them.

It was planned to give *Snehapana* in increasing doses (50 ml, 100 ml, 150 ml and so on) till the appearance of *Samyak Snigdha Lakshanas* (i.e. fats in the stool). However, no volunteer was forced to take *ghee* as per the decided schedule as some of them had to stop *Snehapana* or reduce its doses due to symptoms of nausea, heaviness or loss of appetite. No volunteer could tolerate *Snehapana* beyond three days. *Ghee* was given with *Daliya* or milk in the morning since none of the volunteers was ready to take *ghee* only (*Accha Snehapana*) in this study area. *Bahya Snehana* (*Abhyanga*) with *Mahanarayana taila* (the common *Vatahara* oil) was given for 15-20 min and *Svedana* (plain steam bath) was given for 10-15 min (as per the tolerance of the patients).

The volunteers were advised to remain empty stomach on the morning of the *Vamana* day. Very few volunteers who were having *Sukumara Prakriti* or could not withstand hunger were allowed to take 100 ml of milk in the morning.

As observed in this study, maximum time taken to consume fluid was 15 min, maximum time required for initiation of *Vamana* procedure after fluid intake was 10.45 min and maximum duration of expelling vomitus was 31 min. In maximum number of volunteers, the *Vamana* procedure was *Pittanta* (ending with bilious vomitus) which shows ideal

Table 15: Upadhravas observed at the end of Vamana in volunteers

Upadrava (complications)	No. of subjects	Percentage
No	29	96.7
Yes	1	3.3
Total	30	100.0

Vamana as per the texts. However, in some volunteers (where *Kapha* accumulation or *Kapha* obstruction was more) - it was *Kaphanta*. The *Vamana Vegas* ranged from 4 to 8 in number.

Quantity of medicated fluid intake ranged from 800 ml minimum to 2500 ml maximum (average 1486 ml). Quantity of total fluid output ranged from 250 ml minimum to 1700 ml maximum (average 879.33 ml). Total quantity of the fluid expelled was lesser than the total quantity of fluid taken. This is because the maximum volunteers were empty stomach. When the volunteer is administered fluid for *Vamana*, part of it is digested and absorbed from the gut. Only the fluid which is more than the digestive capacity or which is causing extra stress on GIT is expelled out. However, due to variations in reverse peristalsis and force of ejection during bouts, the intake output ratio varies from person to person.

Examination of vomitus included macroscopic, microscopic and chemical examinations.

Under the macroscopic examination, colour, consistency, pH, specific gravity, presence of mucus and blood were examined in the vomitus. The colour of the vomitus was found whitish (due to milk) in first bout and yellowish (bile mixed) in subsequent bouts. The vomitus was initially clear, but precipitated after standing due to milk caseine. The pH of the vomitus was found to be 6 to 6.5. (the acidic pH neutralized up to some extent by milk). Specific gravity of the vomitus was found to be 1.025 to 1.030. Mucus was present in almost all bouts, especially in first and second bouts. Blood was not present in any of the samples.

The microscopic examination of the vomitus was done for presence of RBCs, WBCs, epithelial cells and parasites which were found absent in all the samples.

The chemical examination of vomitus was done for bile salts, bile pigments and proteins. Bile salts were present in all the samples. Bile pigments were detected in some samples. Proteins in vomitus ranged from 10 to 30 mg/dl.

As per the texts, the *Samyak Shuddhi Lakshanas* as observed in the volunteers after *Vamana* were-

- *Vatanulomana* (passage of flatus)
- Lightness of precordium
- Lightness of the body
- Happiness
- Weakness

In 56.6% of the volunteers, 4 to 5 *Lakshanas* were observed after *Vamana*.

In the present study, only one volunteer developed *Bhrama* (giddiness) in whom there was a fall in serum electrolyte levels; however with ORS for two days, the symptom was settled. No other complications were observed as such in other volunteers.

Volunteers were given *Shikanji* after 1 h of *Vamana* (oral rehydration solution) followed by thin *Khichari* (rice and moong dal) and then thick *Khichari* or *Daliya* (as per the choice of the volunteers).

Shikanji and *Khichari* were the maximum accepted and well digested diet after *Vamana*. Maximum volunteers preferred *Samsarjana Krama* of shorter duration i.e. 24 h (2-3 *Ahara Kalas*).

The *samshodhana Chikitsa* (bio-cleansing therapy) of *Ayurveda*, which includes *Panchakarma* treatment, basically intends to eliminate the toxic elements from the body and thereby enhances the immunity of the body. The toxic products of body metabolism can be broadly divided into water soluble, fat soluble and volatile substances. The volatile substances like carbon dioxide can easily be removed from the body through lungs. While there are number of mechanisms available to get rid of the water soluble toxic materials through kidney, sweat and other body secretions, removal of fat-soluble toxic materials is very difficult and only liver can play a small role. Hence it is likely that, there would be accumulation of fat-soluble toxic products in the body. Liberal use of oil and ghee in various *Panchakarma* procedures makes it possible to eliminate these fat soluble toxic products. In modern day medicine, we understand that molecules move from higher concentration to lower concentration when separated by a diffusible membrane. The skin and the mucus membrane provide an excellent opportunity for this manoeuvre. While skin of an average adult only provides a surface area of less than 2 m², the gastrointestinal tract is many meters long with a highly permeable mucus membrane. The mucus membrane of gut has many folds and projections in the form of villi and microvilli, which help to increase the total exchange area, equivalent to a tennis court. Various *Panchakarma* procedures like *Vamana* (therapeutic emesis), *Virechana* (therapeutic purgation) and *Anuvasana* (medicated oil enema) use oil liberally, thereby removing toxic fat-soluble waste materials. Prior to the five *Pradhana Karmas* (main procedures), *Svedana* procedure using hot steam increases the local skin blood flow, thereby enhancing the exchange process. The Ayurvedic medicines added to the oil might give additional benefits.

Conclusion

Thus *Vamana* is a safe *Panchakarma* procedure when undertaken methodically. It is a bio-cleansing process which probably eliminates fat soluble toxic substances from the body. In modern era with modified dietary habits, the procedure needs to be revalidated. For the present observational study, *Vamana* procedure was given to healthy volunteers after *Poorvakarmas*. The volunteers' maximum ghee consumption for *Snehapana*

was found to be 50 ml, 100 ml and 150 ml for day I, day II and day III respectively. Maximum time taken to consume fluid was 15 min, maximum time required for initiation of *Vamana* procedure after fluid intake was 10.45 min and maximum duration of expelling vomitus was 31 min in the present study. Number of *vegās* ranged from 4 to 8 in this study. Regarding *Antiki Shuddhi*, maximum volunteers (66.7%) showed *Pittanta Vamana*. Maximum quantity of medicated fluid intake was 2500 ml (average 1486 ml); however, maximum quantity of total fluid output was 1700 ml (average 879.33 ml). Total quantity of the fluid expelled was lesser than the total quantity of fluid intake due to absorption of some fluid by gut.

Examination of vomitus included macroscopic, microscopic and chemical examinations. The colour of the vomitus was whitish and yellowish, initially clear, but precipitated after standing, with pH 6 to 6.5 and specific gravity 1.025 to 1.030. Mucus was present in almost all bouts. In the microscopic examination of the vomitus, RBCs, WBCs, epithelial cells and parasites were found absent in all the samples. In chemical examination of vomitus, bile salts and bile pigments were detected. Proteins in vomitus ranged from 10 to 30 mg/dl.

Only one volunteer developed *Bhrama* (giddiness) as *Upadrava*, in whom there was a fall in serum electrolyte level, and it was managed with ORS. Most of the volunteers showed *Samyakt Shuddhi Lakshanas* as - *Vatanulomana* (passage of flatus), lightness of precordium, lightness of the body, *Manahprasada* (happiness) and weakness. *Shikanji* and *Khichari* was the maximum accepted and well digested diet after *Vamana*. Maximum volunteers preferred *Samsarjana Krama* of shorter duration i.e. 24 hs (3 *Ahara Kalas*).

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