Clinical Research

Physiological and biochemical changes with *Vamana* procedure

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### Abstract

*Vamana Karma* (therapeutic emesis) primarily a *Samshodhana Karma* (purification procedure) is one of the five *Pradhana Karmas* (chief procedures) of *Panchakarma*. It is mentioned in Ayurvedic texts that a person after *Samyak Vamana* (proper *Vamana*) experiences lightness of the body, *Hrit* (precordium), *Kantha* (throat/voice), and *Shirah* (head) and weakness. This procedure is effectively used in healthy and ailing persons for purification of body and extraction of *Doshas* (especially *Kapha*) in Ayurvedic system. It has been found worth to observe the physiological and biochemical changes during *Vamana* and after the procedure to understand the effect/safety margins of the procedure in healthy volunteers.

**Key words:** Biochemical changes, *Doshas*, *Hrit*, *Kantha*, *Panchakarma*, physiological changes, *Samshodhana Karma*, *Shira*, *Vamana*, *Virechana*

### Introduction

*Vamana* and *Virechana* are mainly used for extraction of vitiated *Doshas* from the body.[1] If the *Vamana* procedure is adopted properly, lightness of the body, clarity of precordium (*Hridya*), throat (*Kantha*) and head (*Shirah*), happiness and weakness are the usual symptoms following *Samyak Shuddhi* (proper purification).[2,3]

It is also mentioned that the person undergoing *Vamana* never develops[4] *Kasa* (cough), *Malavirdhi* in *Srotasas* (accumulation of waste in body channels), *Svarabheda* (hoarsness of voice), *Nidra* (sleepiness), *Tandra* (drowsiness), *Mukha Durgandhata* (bad smell in mouth), *Vishapanya Upadrava* (complications of poisoning), *Kapha Srava* (excessive salivation or toxemia), *Grahan* (malabsorption syndrome).

According to *Ashtanga Hridaya*, *Samyak Shodhana* results into[5] clarity of *Buddhi* (thought), strength of *Indriyas* (sense organs), stability of *Dhatus* (body tissues), improvement of *Agni* (appetite and digestive capacity), delay of ageing.

### Materials and Methods

The present study is carried out at Ayurveda Central Research Institute, Delhi in collaboration with Department of Physiology, All India Institute of Medical Sciences (AIIMS) on 30 apparently healthy volunteers between the age group of 18 to 60 years.

**Exclusion criteria**

- Patients of hypertension, diabetes, renal diseases, peptic ulcer, jaundice, acute infections, dehydration and any other chronic disease which is not suitable for *Vamana Karma* as detected by clinical history/investigations.
- Age group: Lesser than 18 and above 60 years.
- Patients with lactose intolerance.
- Pregnant/lactating women.

**Procedure adopted**

Volunteer’s written consent in Hindi was taken and information...
about the study was provided in information sheets on the day of registration. Physical examination along with physiological parameters were assessed before, during and after Vamana. Routine blood examinations like Total Leukocyte Count, Differential Leukocyte Count, Hemoglobin%, Blood Sugar, Kidney Function Tests, Liver Function Tests, etc. were done so as to exclude any underlying disease in the volunteers. The procedure of Vamana is as per the standard protocol prescribed in classics and adopted in earlier works.[8]

### Observations

#### Changes in blood pressure
A rise in systolic BP has been observed in the volunteers during the procedure of Vamana. However, after completion of the procedure, systolic BP became normal. The systolic BP during Vamana ranged from 100 to 170 mmHg [Figure 1a]. A rise in diastolic BP has been observed during the procedure of Vamana. However, after completion of the procedure, diastolic BP became normal. The diastolic BP during Vamana ranged from 70 to 100 mmHg. The rise in systolic BP was more marked as compared to the rise in diastolic BP during Vamana procedure [Table 1, Figure 1b].

#### Changes in pulse rate
It has been observed that the pulse rate increased during the Vamana procedure and was normal after the procedure. The pulse rate ranges from 65 to 106/min during the Vamana procedure [Table 2, Figure 2].

#### Changes in body temperature
A mild rise in temperature was noticed during the Vamana procedure and was normal after the procedure. The temperature ranged from 98° to 99°F during the procedure [Table 3, Figure 3].

#### Changes in respiration rate
A mild rise in respiration rate was noticed during the Vamana procedure and was normal after the procedure. The respiration rate ranged from 16 to 26 per min during the procedure [Table 4, Figure 4].

#### Effect of Vamana on appetite
There was an improvement in appetite of the volunteers after Vamana. Before Vamana only 40% volunteers showed good appetite while after Vamana 73.3% of the volunteers showed good appetite. The volunteers with poor or irregular appetite reported improvement in their appetite. The improvement in appetite was significant [Table 5].

#### Table 1: Change in blood pressure

| Measured          | Minimum | Maximum | Mean   |
|-------------------|---------|---------|--------|
| Systolic BP in mmHg |         |         |        |
| Before Vamana     | 90      | 140     | 112.06 |
| During Vamana     | 100     | 170     | 125.47 |
| Just after Vamana | 90      | 160     | 117.07 |
| Diastolic BP in mmHg |       |         |        |
| Before Vamana     | 60      | 90      | 76.77  |
| During Vamana     | 70      | 100     | 85.07  |
| Just after Vamana | 60      | 94      | 76.80  |

BP: Blood pressure

#### Table 2: Change in pulse rate

| Pulse rate per min | Range | Mean   |
|-------------------|-------|--------|
|                   | Minimum | Maximum |    |
| Before Vamana     | 62     | 100     | 74.06 |
| During Vamana     | 65     | 106     | 81.16 |
| Just after Vamana | 62     | 98      | 74.83 |

#### Table 3: Change in body temperature

| Body temperature (°F) | Range | Mean   |
|-----------------------|-------|--------|
|                       | Minimum | Maximum |    |
| Before Vamana         | 97.0   | 99.0    | 98.08 |
| During Vamana         | 98.0   | 99.0    | 98.50 |
| Just after Vamana     | 97.0   | 98.6    | 98.13 |
Effect of *Vamana* on bowel habits
There was a marked improvement in the bowel habit of the volunteers after *Vamana*. Only 50% were having regular bowel habit with normal consistency before *Vamana*, but after *Vamana* 76.7% showed regular bowel habits with normal consistency. Volunteers with hard, loose consistency stool and irregular timings of bowel evacuation showed improvement in their symptoms. There was significant improvement in bowel habit [Table 6].

Effect of *Vamana* on heaviness in abdomen after food
There was significant reduction in complaint of heaviness of abdomen after *Vamana*. Before *Vamana* 53.3% of the volunteers complained of heaviness of abdomen after food but after *Vamana* only 20% of the volunteers were having this complaint and rest of the 80% volunteers had no symptom of heaviness of abdomen [Table 7].

Effect of *Vamana* on sleep pattern
There was a mild improvement in duration of sleep in volunteers after *Vamana*, however, the gross sleep pattern among most of the volunteers remained unchanged [Table 8].

Effect of *Vamana* on intestinal flora
(a) Pus cells count of intestinal flora before *Vamana* and 15 days after *Vamana*: The pus cells in stool of healthy volunteers before *Vamana* were within normal range. There was no change after 15 days of *Vamana* [Table 9a].
(b) Bacteroids count of intestinal flora before *Vamana* and 15 days after *Vamana*: In two volunteers, the bacteroids were present in stools before *Vamana* (10⁷ and 10⁸) which were absent after 15 days of *Vamana*. The changes were statistically insignificant [Table 9b].

(c) *E. coli* count of intestinal flora before *Vamana* and 15 days after *Vamana*: The concentration of *E. coli* before *Vamana* ranged from 0 to 10¹¹ in healthy volunteers. After *Vamana* a mild shift in count was noticed as the *E. coli* count

| Table 4: Change in respiration rate |
|-----------------------------------|
| Respiration rate per min           |
| Range                             |
| Mean                              |
| Minimum                           |
| Maximum                           |
| Before *Vamana*                   |
| 15                                |
| 25                                |
| 18.10                             |
| During *Vamana*                   |
| 16                                |
| 26                                |
| 20.00                             |
| Just after *Vamana*               |
| 16                                |
| 24                                |
| 18.50                             |

| Table 5: Effect of *Vamana* on appetite |
|----------------------------------------|
| Appetite                               |
| Before *Vamana*                       |
| After 15 days of *Vamana*              |
| No. of subjects                        |
| Percentage                            |
| No. of subjects                        |
| Percentage                            |
| Poor                                   |
| 4                                     |
| 13.3                                  |
| 1                                     |
| 3.3                                   |
| Normal                                |
| 13                                    |
| 43.3                                  |
| 7                                     |
| 23.4                                  |
| Good                                  |
| 12                                    |
| 40.0                                  |
| 22                                    |
| 73.3                                  |
| Irregular                              |
| 1                                     |
| 3.3                                   |
| -                                     |
| -                                     |
| Total                                  |
| 30                                    |
| 100.0                                 |
| 30                                    |
| 100.0                                 |

| Table 6: Effect of *Vamana* on bowel habits |
|--------------------------------------------|
| Bowel habits                               |
| Before *Vamana*                            |
| After 15 days of *Vamana*                  |
| No. of subjects                            |
| Percentage                                |
| No. of subjects                            |
| Percentage                                |
| Regular-Normal                            |
| 15                                      |
| 50.0                                    |
| 23                                      |
| 76.7                                    |
| Regular hard                             |
| 8                                       |
| 26.7                                    |
| 2                                       |
| 6.7                                     |
| Irregular hard                           |
| 2                                       |
| 6.7                                     |
| 1                                       |
| 3.3                                     |
| Loose                                   |
| 5                                       |
| 16.6                                    |
| 4                                       |
| 13.3                                    |
| Total                                   |
| 30                                      |
| 100.0                                   |
| 30                                      |
| 100.0                                   |

| Table 7: Effect of *Vamana* on heaviness in abdomen after food |
|---------------------------------------------------------------|
| Heaviness in abdomen after food                               |
| Before *Vamana*                                               |
| After 15 days of *Vamana*                                     |
| No. of subjects                                              |
| Percentage                                                  |
| No. of subjects                                              |
| Percentage                                                  |
| Absent                                                      |
| 14                                                       |
| 46.7                                                       |
| 24                                                       |
| 80.0                                                       |
| Present                                                     |
| 16                                                       |
| 53.3                                                       |
| 6                                                       |
| 20.0                                                       |
| Total                                                       |
| 30                                                       |
| 100.0                                                      |
| 30                                                       |
| 100.0                                                      |

| Table 8: Effect of *Vamana* on sleep pattern |
|---------------------------------------------|
| Sleep pattern                              |
| Before *Vamana*                             |
| After 15 days of *Vamana*                   |
| No. of subjects                            |
| Percentage                                |
| No. of subjects                            |
| Percentage                                |
| <6 h                                        |
| 5                                          |
| 17.3                                       |
| 4                                          |
| 13.3                                       |
| 6-8 h                                       |
| 15                                         |
| 51.7                                       |
| 16                                         |
| 53.3                                       |
| >8 h                                        |
| 9                                          |
| 31.0                                       |
| 10                                         |
| 33.4                                       |
| Total                                       |
| 29                                         |
| 100.0                                      |
| 30                                         |
| 100.0                                      |
Effect of Vamana on hematological parameters
(a) Hematology before Vamana and after 5 min of Vamana: Erythrocyte Sedimentation Rate (ESR) decreased significantly after 5 min of Vamana. Total Leukocyte Count (TLC) increased significantly after 5 min of Vamana [Table 9a].
(b) Hematology before Vamana and after 15 days of Vamana: The hematological parameters were again assessed after 15 days of Vamana and the values were compared with the parameters assessed before Vamana. A significant decrease was observed in ESR after 15 days of Vamana [Table 10b].

Effect of Vamana on lipid profile
(a) Changes in lipid profile before Vamana and after 5 min of Vamana: Lipid profile was assessed at the day of registration (before Snehana and Svedana). The values were compared with the results of lipid profile obtained after 5 min of Vamana. Significant increase in High Density Lipoproteins (HDL) and significant decrease in Low Density Lipoproteins (LDL) was observed. Total cholesterol was noticed after 5 min of Vamana, though the decrease was statistically insignificant [Table 11a].
(b) Lipid profile before Vamana and after 15 days of Vamana: Lipid profile was assessed at the day of registration. The values were compared with the results of lipid profile obtained after 15 days of Vamana. It was observed that, HDL, Very Low Density Lipoproteins (VLDL), and serum triglycerides insignificantly increased. Statistically insignificant decrease in LDL and total cholesterol was noticed after 15 days of Vamana [Table 11b].

Effect of Vamana on electrolytes
(a) Serum electrolytes before Vamana and after 5 min of Vamana: There was statistically insignificant fall in serum sodium and serum potassium levels after 5 min of Vamana. All the values of serum electrolytes before and after Vamana were within the normal range [Table 12a]. As Upadrava, only one volunteer developed Bhrama (giddiness) and there was a fall in serum electrolyte level just after Vamana, and he was managed with Oral Rehydration Solution (ORS).
(b) Serum electrolytes before Vamana and after 15 days of Vamana: Serum sodium and serum potassium level were assessed at the day of registration and after 15 days of Vamana. The values were compared and it was observed that there was statistically insignificant fall in serum sodium and serum potassium levels. All the values of serum electrolytes before and after Vamana were within the normal range [Table 12b].

Effect of Vamana on Liver Functional Test (LFT) and Renal Functional Test (RFT)
(a) Liver Functional Test (LFT) and Renal Functional Test (RFT) before Vamana and after 5 min of Vamana: LFT and RFT were assessed before Vamana and after 5 min of Vamana. It was observed that Blood Urea Level (BUL) decreased significantly. Total serum protein and serum creatinine decreased insignificantly. Serum Glutamic Oxaloacetic Transaminase (SGOT), Serum Glutamic Pyruvic Transaminase (SGPT), were found to be increased significantly though all the values were within normal range. Serum bilirubin increased insignificantly [Table 13a].
(b) LFT and RFT before Vamana and after 15 days of Vamana: LFT and RFT were assessed before Vamana and after 15 days of Vamana. It was observed that BUL, total serum protein and serum creatinine decreased insignificantly. SGPT, serum bilirubin were found to increase insignificantly. SGOT was found to increase significantly though all the values of above parameters were within the normal range [Table 13b].

Effect of Vamana on immunological status
(a) Immunological status before Vamana and after 5 min of Vamana: Biochemical investigations were performed before Vamana and after 5 min of Vamana. It was observed that plasma histamine and plasma adrenaline decreased insignificantly. Plasma dopamine and plasma nor-adrenaline increased after 5 min of Vamana insignificantly [Table 14a].
(b) Immunological status before Vamana and after 15 days of Vamana

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### Table 9a: Effect of Vamana on intestinal flora (pus cell count)

| Pus cells | Before Vamana | 15 days after Vamana |
|-----------|---------------|---------------------|
| No. of subjects | Percentage | No. of subjects | Percentage |
| 0 to occasional | 15 | 50.0 | 15 | 50.0 |
| 1-2/hpf | 15 | 50.0 | 15 | 50.0 |
| Total | 30 | 100.0 | 30 | 100.0 |

### Table 9b: Effect of Vamana on intestinal flora (bacteroids)

| Bacteroids | Before Vamana | 15 days after Vamana |
|------------|---------------|---------------------|
| No. of subjects | Percentage | No. of subjects | Percentage |
| Absent | 28 | 93.3 | 30 | 100.0 |
| $10^7$ | 1 | 3.3 | 0 | 0.0 |
| $10^8$ | 1 | 3.3 | 0 | 0.0 |
| Total | 30 | 100.0 | 30 | 100.0 |

### Table 9c: Effect of Vamana on intestinal flora ($E. coli$)

| $E. coli$ | Before Vamana | 15 days after Vamana |
|-----------|---------------|---------------------|
| No. of subjects | Percentage | No. of subjects | Percentage |
| Absent | 1 | 3.3 | 1 | 3.3 |
| $10^6$ | 1 | 3.3 | 3 | 10.0 |
| $10^5$ | 6 | 20.0 | 10 | 33.3 |
| $10^6$ | 6 | 20.0 | 9 | 30.0 |
| $10^7$ | 6 | 20.0 | 2 | 6.7 |
| $10^8$ | 3 | 10.0 | 2 | 6.7 |
| $10^9$ | 3 | 10.0 | 0 | 0.0 |
| $10^{10}$ | 1 | 3.3 | 3 | 10.0 |
| $10^{11}$ | 3 | 10.0 | 0 | 0.0 |
| Total | 30 | 100.0 | 30 | 100.0 |
Biochemical investigations were performed before Vamana and after 15 days of Vamana. It was observed that plasma histamine and plasma adrenaline decreased insignificantly. Plasma dopamine and plasma...
nor-adrenaline increased after 15 days of Vamana insignificantly [Table 14b].

Effect of Vamana on IgE
There was insignificant increase in Immunoglobulin E (IgE) level when compared before Vamana with just after 5min Vamana and 15 days after Vamana [Table 15].

DISCUSSION

Panchakarma procedures are also recommended in healthy individuals in Ayurvedic classics. It is important to understand the physiological, biochemical and immunological changes in the healthy volunteers. The present study was carried out on 30 apparently healthy volunteers, between the age group of 18 and 60 years to observe the changes during and after Vamana procedure. Volunteers with lactose intolerance were excluded as milk was used in this study. Pregnant and lactating mothers were also excluded from the study because of physiological variations and specified Do’s and Don’ts for them.

The physiological parameters were assessed before, during and after Vamana. Rise in systolic and diastolic BP, pulse rate, temperature and respiration rate were noticed during the Vamana procedure which may be attributed to the sympathetic system involvement caused by physiological stress.

There was an improvement in appetite (Agni) of the volunteers after Vamana. Volunteers with poor or irregular appetite showed improvement. Volunteers with hard, loose consistency of stool and irregular timings of bowel evacuation showed improvement in symptoms. Maximum volunteers developed

| Table 12a: Effect of Vamana on serum electrolytes (after 5 min) (n=25) |
|------------------|------------------|------------------|------------------|------------------|
| Serum electrolytes | Mean | Standard | t value | P value |
|                   | Before Vamana | deviation of difference | | |
| Serum sodium (mmol/L) | 142.68 | 142.28 | 4.444 | 0.450 | >0.05 |
| Serum potassium (mmol/L) | 4.496 | 4.352 | 0.4519 | 1.593 | >0.05 |

| Table 12b: Effect of Vamana on serum electrolytes (after 15 days) (n=25) |
|------------------|------------------|------------------|------------------|------------------|
| Electrolytes | Mean | Standard | t value | P value |
|                   | Before Vamana | deviation of difference | | |
| Serum sodium (mmol/L) | 142.68 | 141.48 | 3.969 | 1.512 | >0.05 |
| Serum potassium (mmol/L) | 4.496 | 4.472 | 0.4539 | 0.264 | >0.05 |

| Table 13a: Effect of Vamana on liver function test and renal function test (after 5 min) |
|------------------|------------------|------------------|------------------|------------------|
| Parameters | Mean | Standard | t value | P value |
|                   | Before Vamana | deviation of difference | | |
| Total serum protein (g/dl) | 7.383 | 7.137 | 1.0559 | 1.279 | >0.05 |
| Serum bilirubin (mg/dl) | 0.826 | 0.837 | 0.2939 | 0.205 | >0.05 |
| SGOT (U/L) | 20.93 | 23.23 | 5.140 | 2.451 | <0.05 |
| SGPT (U/L) | 22.40 | 25.53 | 7.816 | 2.196 | <0.05 |
| BUL (mg/dl) | 23.580 | 22.040 | 3.7120 | 1.634 | <0.05 |
| Serum creatinine (mg/dl) | 0.957 | 0.907 | 0.1676 | | >0.05 |

| Table 13b: Effect of Vamana on liver function test and renal function test (after 15 days) |
|------------------|------------------|------------------|------------------|------------------|
| Parameters | Mean | Standard | t value | P value |
|                   | Before Vamana | deviation of difference | | |
| Total serum protein (g/dl) | 7.383 | 7.350 | 1.1336 | 0.161 | >0.05 |
| Serum bilirubin (mg/dl) | 0.826 | 0.923 | 0.3171 | 1.670 | >0.05 |
| SGOT (U/L) | 20.93 | 23.70 | 5.935 | 2.553 | <0.05 |
| SGPT (U/L) | 22.40 | 24.47 | 7.611 | 1.487 | <0.05 |
| BUL (mg/dl) | 23.58 | 22.43 | 5.9678 | 1.055 | >0.05 |
| Serum creatinine (mg/dl) | 0.957 | 0.940 | 0.2627 | 0.347 | >0.05 |

SGOT: Serum glutamic oxaloacetic transaminase; SGPT: Serum glutamic pyruvic transaminase; BUL: Blood urea level
Table 14a: Effect of Vamana on immunological status (after 5 min)

| Parameters                  | Before Vamana | After 5 min of Vamana | Standard deviation of difference | t value | P value | Statistical significance |
|-----------------------------|---------------|-----------------------|----------------------------------|---------|---------|--------------------------|
| Plasma histamine (ng/ml)    | 3.04          | 2.927                 | 0.7873                           | 0.788   | >0.05   | Insignificant decrease   |
| Plasma dopamine (ng/ml)     | 14.703        | 14.807                | 1.1291                           | 0.501   | >0.05   | Insignificant increase   |
| Plasma adrenaline (ng/ml)   | 32.30         | 30.53                 | 10.695                           | 0.905   | >0.05   | Insignificant decrease   |
| Plasma nor-adrenaline (ng/ml) | 206.47       | 216.83                | 34.232                           | 1.659   | >0.05   | Insignificant increase   |

Table 14b: Effect of Vamana on immunological status (after 15 days)

| Parameters                  | Before Vamana | After 15 days of Vamana | Standard deviation of difference | t value | P value | Statistical significance |
|-----------------------------|---------------|------------------------|----------------------------------|---------|---------|--------------------------|
| Plasma histamine (ng/ml)    | 3.04          | 2.87                   | 0.8813                           | 1.057   | >0.05   | Insignificant decrease   |
| Plasma dopamine (ng/ml)     | 14.703        | 15.027                 | 0.9369                           | 1.890   | >0.05   | Insignificant increase   |
| Plasma adrenaline (ng/ml)   | 32.30         | 31.93                  | 7.476                            | 0.269   | >0.05   | Insignificant decrease   |
| Plasma nor-adrenaline (ng/ml) | 206.47       | 44.481                 | 1.773                            | >0.05   |         | Insignificant increase   |

Table 15: Effect of Vamana on IgE

| Parameter | Assessment stage | Mean | Standard deviation of difference | t value | P value | Statistical significance |
|-----------|------------------|------|----------------------------------|---------|---------|--------------------------|
| IgE (IU/ml) | Before Vamana    | 77.17 | -                                 | -       | -       | -                       |
|           | Just after 5 min of Vamana | 77.60 | 31.620                           | 0.075   | >0.05   | Insignificant increase   |
|           | After 15 days of Vamana    | 73.90 | 23.165                           | 0.772   | >0.05   | Insignificant decrease   |

regular bowel habit with normal consistency of stool after Vamana. Improvement in heaviness of abdomen after Vamana was also observed. This may be due to Shodhana of Kapha and Pitta and improvement of Agni. As the obstruction caused by Kapha and Pitta were reduced, Vata in Pakvashaya was also regularized resulting in regularized bowel habits. There was an improvement in duration of sleep in volunteers after Vamana.

The intestinal flora was studied before Vamana and 15 days after Vamana. The pus cells (0.2/hpf) and E. coli (10^7-10^8) were within the normal range before Vamana and 15 days after Vamana. In few volunteers, the bacteroids (10^7-10^8) were present before Vamana and were absent after 15 days of Vamana. This indicates that the Vamana is a cleansing procedure which does not disturb intestinal flora as such.

ESR decreased significantly after 5 min, as well as, after 15 days of Vamana. TLC increased significantly after 5 min of Vamana. There was a fall in plasma electrolyte, BUL and serum creatinine levels but, all values are within physiological limits.

Significant fall in plasma adrenaline, plasma histamine and insignificant increase in plasma dopamine and plasma nor-adrenaline was observed in the volunteers after Vamana.

Conclusion

Thus, it can be concluded that, Vamana is a safe Panchakarma procedure if undertaken methodically. It is a cleansing process that improves appetite, regulates bowel habits and improves sleep pattern. It decreases LDL and serum cholesterol level as a part of its Kapha-Hara action. Mild elevations in BP (systolic and diastolic), pulse, temperature and respiration during the Vamana procedure may be attributed to sympathetic stimulation. Thus its use in hypertensive subject may be avoided. It improves appetite and regularizes bowel habits. It also gives some relief to the feeling of heaviness of abdomen after taking food. It shows a mild cleansing action on intestinal flora, however, the bacteroids and E. coli remain within normal limits after Vamana.

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हिंदी सारांश

वमन प्रक्रिया में शरीर क्रियात्मक एवं जैव-रासायनिक परिवर्तन

भारती गुप्ता, सुशील सिंह, महापात्र, रेणु माखिजा, आदर्श कुमार, निन्दिल एम. जिरंकलगीकर,
मदन एम. पाठि, रमेशबाबू देवज्ञा

इस अध्ययन में पंचकर्म में ‘वमन’ प्रक्रिया के सभी वैज्ञानिक पहलुओं का अध्ययन करना ही उद्देश्य था। ऐसा माना जाता है कि वमन द्वारा विषेसे पदार्थ शरीर से बाहर निकलते हैं जिससे शरीर की प्रतिरक्षा शक्ति की वृद्धि होती है। आयुर्वेदिक विकित्सा द्वारा रोगी का संक्षिप्त इतिहास लेकर एवं उसके बल के अनुसार लाभ हानि ध्यान में रखते हुए प्रोटोकॉल के अनुसार उसे ३ से ५ दिन तक स्नेहपान व अगले दिन प्रति: अभ्यंग, स्वेदन, तत्पश्चात ‘वमन’ करवाया गया। ऐसा देखा गया कि वमन क्रिया के दौरान व्यक्ति की नाड़ी, तापमान तथा श्वास गति बढ़ जाती हैं जो क्रिया के बाद पुनः सामान्य हो जाती है। वमन क्रिया के पश्चात अभ्यंग की वृद्धि होती है तथा पाचन संबंधी क्रियाएं नियंत्रित होती हैं। वमन के पॉच मिनट पश्चात इ.एस.आर में कमी पायी गयी, तथा टी.एल.सी. थोड़ा बढ़ गया। वमन के १५ दिन पश्चात प्लाज्मा इलेक्ट्रोलाइट में कुछ कमी देखी गई जो कि सामान्य सीमा में थी। वमन के पश्चात प्लाज्मा एड्रीनालिन तथा प्लाज्मा हिस्टामिन के स्तर में भी कुछ गिरावट आयी जो सामान्य सीमा में थी।