ABSTRACT
Children are the most important and crucial segment of our population. During these formative years foundation is laid for adult life. Moreover, the quality of our future human-resource is going to be determined largely by these children. Thus the well being of these children, on the threshold of physical and sexual maturity is vital for national development. This study includes preparation of shoshajid ghrita, chemical analysis of shoshajid ghrita, and clinical study on management of balashosha by shoshajid ghrita. According to UNICEF “The state of the world children” average and under 5 years mortality rate ranges from almost 200/1000 in least developed countries to less than 9/1000 in developed countries. Infant mortality rate in India is very high as reported, i.e. 95 per 1000 live births. It was 68 per 1000 live births in 2000. A malnourished child dies at every one second. India is the second most populous country in the world with the population 1.47 billion. 47% of the children under three years of age are malnourished over 200 million children in developing countries to more than half of the nearly 12 million under five death in developing countries each year. In the present work an attempt has been made to establish the efficacy of the drug shoshajid ghrita to manage the disease balashosha and also Protein Energy Malnutrition (PEM), which is a major public health problem in today’s society.
Key words: Balashosa, Shoshajid ghrita, Protein Energy Malnutrition.

1. INTRODUCTION
In the disease balashosa [1] there is obstruction of rasavaha srotas by kapha dosha [2]. So there is either abolition or inadequate nutrition to the further dhatus. The agni also becomes sluggish. The symptoms [3] like Shuskata, Arochaka, Pratishyaya, Jwara, Kasa, Mukhanetra Snigdhata and Mukhanetra suklata are found. In modern science emaciation of body is due to improper or inadequate nourishment, so the disease caused is called as malnutrition or Protein Energy Malnutrition [4] (PEM). In the primary stage there is inadequate or improper maintenance of weight and growth and also the child becomes vulnerably prone to many infections due to low immunity status and then the child becomes morbid. In the present study the trial drug shoshajid ghrita [5], which is prepared from cow’s ghee and eight herbal drugs such as Yasthimadhu [6], Pippali [7], Lodhra [8], Padmaka [9], Chandana [10], Utpala [11], Talisha [12] and Sariba [13] contains multiple added synergetic action of Kaphanisaraka (expectorant), Kapha vata samaka, Dipana-pachana (Appetiser and digestive), Balya (provides strength), Vrushya, Rasayana (antioxidant and immunomodulator), Kshyaya and shoshanasaka (corrects degradation and emaciation), Yakrit uttejaka (helps in metabolism) properties. With all the above properties of the research drug it could have break the pathogenesis of balashosa by removing the obstruction in rasavaha srotas along with aggravating the power of digestion, assimilation and metabolism. It properly uses the ingested food and also supplies nutrition to the body. Hence it increases the immunity, gives strength to reduce and protest other infectious diseases and maintains growth of the body mainly weight.

2. AIMS & OBJECTS
A. Preparation of shoshajid ghrita.
B. Chemical Analysis shoshajid ghrita.
C. Clinical study on management of balashosa by shoshajid ghrita.

3. MATERIALS & METHODS
Step 1: preparation of shoshajid ghrita
Materials
A. Sudhya Goghrita (10 liters)
B. Murchhana Dravyas (Each 160 gm) - Haritaki, Bibhitaki, Amalaki, Mustaka, Haridra, Matulunga nimbu swarasa [14].
C. Kalka dravyas (Each 315 gm) - Yasthimadhu, Pippali, Lodhra, Padmaka, Chandan, Utpala, Talisa, Sariba.

METHOD

Yavakuta churna of murchhana dravyas were prepared and soaked in water. Goghrita was taken in an iron container and heated with slow flame. Then the soaked yavakuta churna was added slowly being cautious for wastage by formation of foam and boiled till to obtain sign of Ghritamurchhana\textsuperscript{[15]}. Then the paka is finished. It was cooled and the murchhita goghrita was collected in a big iron container after filtration. Kalka of kalka dravyas was prepared and added with the murchhita ghrita four times of water of murchhita ghrita was added with this and boiled till to obtain the ghrita paka lakshana\textsuperscript{[16]}. Then the paka is stopped and ghrita is left for swangshita, then filtered and collected the shoshajid ghrita.

Step 2: Clinical study on management of balashosha by shoshajid ghrita

Clinical study was done on 50 number of patients from 1 to 6 years of age were selected applying random sampling from January to December 2009 with all the necessary instruments and equipments at OPD of P.G. Department of Kaumarabhritya, GAM, Puri.

Group A: contain 20 patients; Cases were treated with the only routine diet recommended for that age. Group B: contains 30 patients; the trial drug shoshajid ghrita of 3 ml was administered orally in a single dose with worm water for 1 to 3 years children and of 6ml for 4 to 6 years children consecutively for 2 months and routine diet recommended for that age.

A. Inclusion Criteria

The children suffering from Balashosa were included in the present project on the basis of IAP criteria for diagnosis of PEM - Grade I: Patients with 71 – 80% of expected weight for age, Grade II: Patients with 61 – 70% of expected weight for age, Grade III: Patients with 51 – 60% of expected weight for age, Grade IV: Patients with < 50% of expected weight for age.

B. Exclusion Criteria

I. Cases with devitalizing diseases like Tuberculosis, Mal-absorption syndrome, Recurrent Bronchitis, Chronic diarrhoea, congenital heart disease, Mental retardation, Cerebral palsy, Mongolism, seizure and any sort of grave diseases.

II. The cases that have shown the evidence of helminthiasis were first treated with antihelminthic drugs and later included in this study.

III. Cases with edema were excluded.
C. Investigation
Proper examination of the patient was done with proper history with general and systemic examination at each one month interval on cardinal sign and symptoms of *Balashosa* and PEM i.e. *Shuskata, Arochaka, Pratishyaya, Jwara, Kasa, Netraswetatata, Mukha snigdhata*, weakness and loss of activity vividly. Hemoglobin percentage and serum protein level were investigated routinely at every one month interval and other investigations also done properly to exclude any grave disease.

D. Criteria for assessment of patients
The clinical evaluation of the patient was done by following particular.

I. Objective assessment - The objective assessment was done on the basis of the investigation report of the patient and the anthropometric measurement at each one month interval.

II. Subjective assessment - The subjective assessment was made on the basis of sign and symptoms and has been divided in three groups as $+$ → Mild degree of sign and symptoms, $++$ → Moderate degree of sign and symptoms, $+++$ → Severe degree of sign and symptoms.

4. OBSERVATION
After preparation of drug *shoshajid ghrita* the samples were taken for chemical analysis, Samples were carried out at Sri Jayadev College of Pharmaceutical Sciences, Bhubaneswar (No. SJCP/45/2009).

A. ASSESSMENT SCALE
*Shuskata*: $G_0$ – > 80% of expected weight for age, $G_1$ – 71-80% of expected weight for age, $G_2$ – 61-70% of expected weight for age, $G_3$ – < 60% of expected weight for age.

*Arochaka*: $G_0$ – Normal, $G_1$ – Occasionally shows lack of interest to food or feeling of hunger within 5-6 hours after taking previous meal, $G_2$ – Occasionally showing interest to food or feeling of hunger within 8-10 hours after taking meal, $G_3$ – Always showing lack of interest to food or taking meal once in a day.

*Pratishyaya*: $G_0$ – Normal, Absence of symptom or Dryness of nasal mucosa, $G_1$ – Occasional nasal discharge, $G_2$ – Discharge is more frequent during morning and evening, $G_3$ – Discharge all times (Day and Night).
**Jwara:** $G_0$ – No fever (Temperature $\leq 98.6^\circ$F), $G_1$ – Mild fever (Temperature $98.6^\circ$-100$^\circ$F), $G_2$ – Moderate fever (Temperature 100$^\circ$-102$^\circ$F), $G_3$ – Moderate fever (Temperature $>102^\circ$F).

**Kasa:** $G_0$ – No bout of cough, $G_1$ – Intermittent cough or cough only during morning hours and continuing throughout day, $G_2$ – Constant cough, not interfering with sleep or daily activities, $G_3$ – Constant or paroxysmal episode of cough interfering with sleep or daily activities.

**Netraswetata:** $G_0$ – Normal colour of lower palpebral conjunctiva, $G_1$ – Whitish pink colour of lower palpebral conjunctiva, $G_2$ – Pinkish white colour of lower palpebral conjunctiva, $G_3$ – Whitish or pale coloured lower palpebral conjunctiva.

**Mukha Snigdha:** $G_0$ – Fairly demark able line on forehead when drawn through sketch pen and erase with force, $G_1$ – Fairly demark able line on forehead when drawn by sketch pen and easily erasable, $G_2$ – Faintly demark able line on forehead when drawn by sketch pen and erasable very easily, $G_3$ – No demark able line on forehead when drawn through sketch pen.

**Weakness:** $G_0$ – Normal, $G_1$ – Patient feels weak after playing, working or doing something continuously, $G_2$ – Patient shows laziness or disinterested to do anything or to play also, $G_3$ – Bedridden or always interested to sleep.

**Loss of Activity:** $G_0$ – Child always interested to do any work or to play with friends, $G_1$ – Child sometimes disinterested to do any work or play with friends also, $G_2$ – Child sometimes showing interest to do any work or play with friends also, $G_3$ – Child always disinterested to do any work and play with friends also.

**B. Improvement Scale**

**Weight and Height Improvement Scale:** Weight Improvement of (0.18 – 1.0 kg) - Mild improvement, Weight (1.1 – 2.0 kg) - Moderate improvement, Weight (> 2.0 kg) - Maximum improvement for age 1 to 3 years and Weight Improvement of (0.24 – 1kg) - Mild improvement, Weight (1.1 – 2.0 kg) - Moderate improvement, Weight (> 2.0 kg) - Maximum improvement for age 4 to 6 years.

**Height Improvement Scale:** Height Improvement of (< 0.1Cm) - No improvement, Height (0.1 – 0.25Cm) - Mild improvement, Height (0.26 – 0.5Cm) - Moderate improvement, Height (> 0.5Cm) - Maximum improvement for age 1 to 3 years and Height Improvement of (< 0.1Cm) - No improvement, Height (0.1 – 1Cm) - Mild improvement, Height (1.1 – 2Cm) - Moderate improvement, Height (> 2Cm) - Maximum improvement for age 4 to 6 years.
Head Circumference Improvement Scale: Head Circumference in (< 0.1Cm) - No improvement, (0.1 – 0.2Cm) - Mild improvement, (0.21 – 0.3Cm) - Moderate improvement, (> 0.3Cm) - Maximum improvement.

Chest Circumference Improvement Scale: Chest Circumference in (0 cm) - No improvement, (0.1 – 1.0 cm) - Mild improvement, (1.1 – 2.0 cm) - Moderate improvement, (> 2.0 cm) - Maximum improvement.

Mid Arm Circumference Improvement Scale: Mid Arm Circumference Improvement in (0 cm) - No improvement, (0.1 – 0.5 cm) - Mild improvement, (0.6 – 1.0 cm) - Moderate improvement, (>1.0 cm) - Maximum improvement.

Clinical Assessment of Result
The clinical study was analyzed after the treatment as hereunder. Cure = 100% remission of sign and symptoms, Maximum improvement = 75-99% of remission of sign and symptoms, Moderate improvement = 50-74% of remission of sign and symptoms, Mild improvement = 25-49% of remission of sign and symptoms, No improvement = < 25% of remission of sign and symptoms.

Table 1: Analytical specification of Shoshajid Ghrita

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Parameters</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Colour</td>
<td>Yellowish red</td>
</tr>
<tr>
<td>2.</td>
<td>Odour</td>
<td>Characteristic odour</td>
</tr>
<tr>
<td>3.</td>
<td>Weight/ml</td>
<td>0.9gm</td>
</tr>
<tr>
<td>4.</td>
<td>Iodine value</td>
<td>87.64%</td>
</tr>
<tr>
<td>5.</td>
<td>Saponification Value</td>
<td>186.9252%</td>
</tr>
<tr>
<td>6.</td>
<td>Acid Value</td>
<td>1.07712%</td>
</tr>
<tr>
<td>7.</td>
<td>Peroxide Value</td>
<td>9.62%</td>
</tr>
</tbody>
</table>

Fig.-1 Patient (Case No. 1) before treatment, Patient (Case No. 1) after treatment
5. DISCUSSION

A. It is observed that Hb% of the Gr. A patients of range ≥ 11, (10 – 10.9), (5 – 9.9) and (< 5) are 0 (0%), 2 (13.33%), 13 (86.66%) and 0 (0%) respectively before treatment and that after one month were 0 (0%), 3 (20%), 12 (80%) and 0 (0%) and of that after two months were 2 (13.33%), 2 (13.33%), 11 (73.33%) and 0 (0%) respectively. The Hb% of Gr. B patients of range ≥ 11, (10 – 10.9), (5 – 9.9) and (< 5) were 0 (0%), 3 (10%), 27 (90%), 0 (0%) respectively before treatment and that of 1 (3.33%), 11 (36.67%), 18 (60%), 0 (0%) respectively after treatment of one month and that of 14 (46.67%), 11 (36.67%), 5 (16.66%), 0 (0%) respectively after treatment of two months.

B. It is observed that Serum Protein value of Gr. A patients of range (2.5 – 3.5), (3.6 – 4.5), (4.6 – 5.5) and (5.6 – 8) were 3 (20%), 10 (66.66%), 2 (13.33%), 0 (0%) respectively before treatment and that of 1 (6.66%), 9 (60%), 5 (33.33%), 0 (0%) after treatment of one month and that of 0 (0%), 4 (26.66%), 9 (60%), 2 (13.33%) after treatment of two months. Serum protein value of Gr. B patients of range (2.5 – 3.5), (3.6 – 4.5), (4.6 – 5.5) and (5.6 – 8) were 14 (46.66%), 10 (33.33%), 6 (20%) and 0 (0%) respectively before treatment that of 2 (6.66%), 11 (36.67%), 16 (53.33%), 1 (3.33%) after treatment of one month and that of 0 (0%), 0 (0%), 14 (46.67%), 16 (53.33%) after treatment of two months.

C. It is revealed that the weight of the Gr. A patients before treatment within the range (6-10kg), (10-14kg), (14-18kg) were 11 (73.33%), 4 (26.67%) and 0 (0%) respectively after one month these were 10 (66.67%), 5 (33.33%), 0 (0%) respectively and after two months these were 8 (53.33%), 7 (46.67%), 0 (0%) respectively. Weight of Gr. B patients within the range (6-10kg), (10-14kg), (14-18kg) before treatment were 17 (56.67%), 11 (36.67%) and 2 (6.66%) respectively, after treatment of one month these were 8 (26.67%), 22 (73.33%), 0 (0%) and after two months these were 2 (6.66%), 17 (56.67%) and 11 (36.67%) respectively.

D. It is revealed that the height of Gr. A patients within the range (68-78), (78-88), (88-98), (98-108), (108-118) before treatment were 5 (33.33%), 3 (20%), 7 (46.67%), 0 (0%), 0 (0%) after one month and two month of treatment the values were also remain unchanged. Height of Gr. B patients within range (68-78), (78-88), (88-98), (98-108), (108-118) before treatment were 8 (26.67%), 2 (6.67%), 16 (53.34%), 3 (10%) and 1 (3.33%) respectively after treatment of one month and two months also the values remain unchanged.
E. It is observed that the Head circumference of Gr. A patients within the range of (40-45cm), (45-50cm), (50-55cm), (55-60cm) before treatment were 2 (13.33%), 10 (66.67%), 2 (13.33%), 1 (6.67%) after treatment of one month and two months also remain unchanged. Head circumference of Gr. B patients within the range of (40-45cm), (45-50cm), (50-55cm), (55-60cm) before treatment were 7 (23.33%), 15 (50%), 8 (26.67%), 0 (0%) respectively after treatment of one month and two months the values also remain unchanged.

F. It is observed that the Chest circumference of Gr. A patients with the range of (38-43cm), (43-48cm), (48-53cm), (53-58cm), (58-63cm) before treatment were 1 (6.67%), 5 (3.33%), 9 (60%), 0 (0%), 0 (0%) respectively. After one month and two months of treatment the numbers were also remain unchanged. Chest circumference of Gr. B patients within the range of (38-43cm), (43-48cm), (48-53cm), (53-58cm), (58-63cm) before treatment were 4 (13.33%), 5 (16.67%), 21 (70%), 0 (0%), 0 (0%) respectively, after treatment of one month were 1 (3.33%), 6 (20%), 22 (73.34%), 1 (3.33%), 0 (0%) respectively, after treatment of two months the numbers were also 1 (3.33%), 6 (20%), 22 (73.34%), 1 (3.33%), 0 (0%) respectively.

G. It is observed that the degree of severity of different sign and symptoms after treatment of one month in Gr. A patients in order of G3, G2, G1 and G0 were respectively as follows after treatment of one month. In Shuskata it was 1, 8, 5 and 1 out of 15 patients. In Arochaka it was 1, 9, 3 and 0 out of 13 patients. In Pratishyaya it was 0, 3, 9 and 0 out of 12 patients. In Jwra out of 2 patients it was 0, 0, 2 and 0. In Kasa out of 12 patients it was 0, 4, 8 and 0. In Netraswetata out of 14 patients it was 1, 8, 5 and 0. In Mukhasnidhata out of 6 patients it was 0, 0, 6 and 0. In Weakness out of 15 patients it was 1, 9, 5 and 0. In loss of activity out of 14 patients it was 0, 3, 6 and 0. In Gr. B patients it was found that in Shuskata out of 30 patients it was 0, 7, 15 and 8. In Arochaka out of 25 patients it was 0, 6, 11 and 8. In Pratishyaya out of 20 patients it was 0, 1, 13 and 6. In Jwra out of 9 patients it was 0, 0, 3 and 6. In Kasa out of 24 patients it was 0, 1, 9 and 14. In Netraswetata out of 29 patients it was 0, 12, 17 and 0. In Mukhasnidhata out of 15 patients it was 0, 3, 10 and 2. In Weakness out of 30 patients it was 0, 8, 16 and 6. In loss of activity out of 17 patients it was 0, 3, 12 and 2.

H. It is observed that the degree of severity of different sign and symptoms in Gr. A patients in order of G3, G2, G1, G0 were respectively as follows after two months of treatment. In Shuskata out of 15 patients it was 1, 5, 7 and 2. In Arochaka out of 13 patients it was 1, 7, 5
and 0. In Pratishyaya out of 12 patients it was 0, 2, 10 and 0. In Jwara out of 2 patients it was 0, 0 and 0. In Kasa out of 12 patients it was 0, 3, 9 and 0. In Netraswetata out of 14 patients it was 1, 4, 9 and 0. In Mukhasnigdhata out of 6 patients it was 0, 0, 6 and 0. In Weakness out of 15 patients it was 1, 5, 8 and 1. In loss of activity out of 9 patients it was 0, 3, 6 and 0. Among Gr. B patients in Shuskata out of 30 patients it was 0, 0, 6 and 24. In Arochaka out of 25 patients it was 0, 0, 6 and 19. In Pratishyaya out of 20 patients it was 0, 0, 12 and 8. In Jwara out of 9 patients it was 0, 0, 1 and 8. In Kasa out of 24 patients it was 0, 0, 0 and 24. In Netraswetata out of 29 patients it was 0, 0, 17 and 12. In Mukhasnigdhata out of 15 patients it was 0, 0, 5 and 10. In Weakness out of 30 patients it was 0, 0, 14 and 16. In loss of activity out of 17 patients it was 0, 0, 5 and 12.

I. It is observed that Gr. A patients after treatment of one month, out of 15 all patients got no improvement (five patients did not turn up), after treatment of two months only 2 patients got mild improvement and 13 patients got no improvement. Among Gr. B patients, out of 30 patients no one got maximum improvement, only 6 patients were under moderate improvement, 18 patients got mild improvement and 6 patients were observed under no improvement. After two months of treatment 6 patients got maximum improvement, 21 patients got moderate improvement, 3 patients got mild improvement and no patient was under any improvement.

6. CONCLUSION
From the study it is revealed that after completion of treatment schedule, trial drug Shoshajid Ghrita with dietary advice treated patients got remarkable results in reducing the sign and symptoms of Balashosha increasing weight and other anthropometric measurements, Hb%, serum protein level and also in reducing the other symptoms of PEM like weakness and loss of activity. Growth pattern in respect of anthropometric measurements was also observed. So it can be concluded that Shoshajid ghrita is beneficial, safe and very effective in management of Balashosha and also PEM. The present study was done with a small sample of patients. The results obtained are just a preview of information for future researchers to study involving large sample size. It is expected that the further study on this project could be beneficial for the children suffering from Balashosha and PEM.

7. REFERENCES