ORIGINAL ARTICLE

# Assessment of Comparative Efficacy of *Nutrileha* against Ready to Use Therapeutic Food in Management of *Karshya* (Severe Acute Malnutrition) in Children: Randomized Controlled Trial

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## Abstract

**Background:** *Karshya*, described as an *Apatarpana Janya Vyadhi* in Ayurveda, results from *Jatharagni* and *Dhatwagni Mandy*a, leading to *Rasadi Dhatu Kshaya*. Affected children present with emaciation, reduced muscle mass, *Shushka Shroni–Udara–Greeva*, *Dhamanijala,* and *Sthoola Parva.* Malnutrition remains a significant public health burden, particularly in developing countries, requiring effective, accessible interventions. *Nutrileha*, containing *Ashwagandha, Trikatu, Ghrita, Tila Taila,* and *Madhu*, possesses *Deepana, Pachana, Brimhana, Rasayana,* and *Yogavahi* properties that may support nutritional recovery in children with *Karshya*. **Objective:** The objective of this study was to compare the efficacy of *Nutrileha* with ready-to-use therapeutic food (RUTF) in children with *Karshya*/severe acute malnutrition (SAM). **Methods:** A total of 60 children diagnosed with *Karshya* (SAM) were randomly assigned to two groups ($n$ = 30 each). Group A received *Nutrileha* (1 tsp twice daily) and Group B received RUTF (200 kcal/kg/day) for 90 days. Assessments were conducted on days 15, 30, 45, 60, 75, and 90, based on subjective parameters (*Dourbalya, Agni,* and *Deha Kshaya*) and objective anthropometric parameters (weight, height, mid-upper arm circumference [MUAC], body mass index [BMI], and weight-for-height). **Results:** Both groups showed significant improvement in subjective and objective parameters ($P < 0.05$). However, *Nutrileha* demonstrated superior improvement in *Dourbalya, Agni, Deha Kshaya*, MUAC, and BMI. *Nutrileha* also showed better enhancement of digestive capacity and nutrient absorption compared to RUTF. **Conclusion:** *Nutrileha* (Group A) proved more effective than RUTF (Group B) in managing *Karshya*/SAM, improving weight-for-height, MUAC, BMI, and subjective symptoms. Its *Deepana–Pachana–Brimhana–Rasayana* actions support its role as a promising therapeutic supplement in childhood malnutrition.

**Key words:** *Karshya*, severe acute malnutrition, *Nutrileha*, ready-to-use therapeutic food, anthropometry, Ayurveda

## INTRODUCTION

*Karshya* is a pathological state caused by impairment of *Jatharagni* and *Dhatwagni,* resulting in improper nourishment of successive *Dhatus* and leading to *Dhatukshaya.*[1,2] Classical Ayurvedic texts describe nutritional disorders under various terminologies such as *Karshya*, *Shosha*, *Balashosha*, *Kshaya*, *Phakka*, *Parigarbhika*, *and Vyadhisambhavaja Phakka.* Acharyas Kashyapa and Vagbhata described malnourished states such as Kshiraja Phakka, Balashosha, and *Shushka Revati Graha*, signifying the ancient awareness of pediatric undernutrition.[3-5]

Clinically, *Karshya* presents with *Tvagasthi–Sheshata*, *Sthoola–Parva*, *Dhamani–Jala–Santati*, and *Kshut–Pipasa–Asahishnuta*.[1] These correlate well with modern

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descriptions of protein-energy malnutrition (PEM), including underweight, wasting, and stunting.[10]

### Need for the study

Despite multiple national programs, malnutrition remains widespread in India. Nearly 40–48% of children in many districts remain underweight. Severe acute malnutrition (SAM) contributes to 1–2 million preventable deaths annually. In Maharashtra, over 4.5 lakh children are registered as SAM.[14] SAM affects 13 million children under the age of five.[15,16] Despite its global significance, SAM has been disregarded by child survival programs, and the term "acute malnutrition" is not recognized by the World Health Organization.

SAM is defined as a weight-for-height measurement of 70% or less below the median, or three standard deviations, with the presence of bilateral pitting edema or mid-upper arm circumference (MUAC) of <110 mm in children aged 1–5 years.[10,18]

Conventional ready-to-use therapeutic food (RUTF) therapy, though effective, is not widely accessible or always acceptable.[13,14]

Ayurveda advocates *Vatahara*, *Rasayana*, *Deepana–Pachana*, and *Santarpana* therapies for managing *Karshya*.[1,3,4] *Nutrileha*, formulated using Ashwagandha, Trikatu, Ghrita, Tila Taila, and Madhu, may offer a safe, culturally acceptable, cost-effective alternative for improving nutritional status.

Thus, a comparative randomized controlled trial between *Nutrileha* and RUTF was undertaken.

### Aim and objectives

#### *Aim*

This study aims to evaluate the comparative efficacy of *Nutrileha* against RUTF in the management of *Karshya* (SAM) in children.

#### *Objectives*

##### *Primary*

1. To assess the efficacy of *Nutrileha* (trial drug) and RUTF (standard control drug) in reducing the cardinal features of *Karshya* (SAM) in children
2. To assess the efficacy of *Nutrileha* (trial drug) and RUTF (standard control) on anthropometric values
3. To compare the efficacy of *Nutrileha* (trial drug) and RUTF (standard control) in the management of *Karshya* (SAM) in children.

##### *Secondary*

1. Preparation of *Nutrileha* in *Rasashala.*

## MATERIALS AND METHODS

### Clinical source

Patients were enrolled from the Kaumarabhritya outpatient department and inpatient department of Mahatma Gandhi Ayurved College, Hospital and Research Centre, Salod (H), AVBRH, and from peripheral anganwadis and multispecialty camps.

### Study design

Randomized, open-labeled, active-controlled clinical study.

### Study type

Interventional study.

### Sampling procedure

Computer-generated random allocation table.

### Sample size and groups

A total of 60 (30 patients in each group).

### Inclusion criteria

1. Patients from 6 months to 5 years suffering from *Karshya*, irrespective of religion, race, gender, or socioeconomic condition
2. Children having low weight-for-height below 3 standard deviations, low body mass index (BMI) for age, and children falling in Grade 3 and 4 classification of PEM according to the Indian Academy of Pediatrics (IAP).

### Exclusion criteria

1. Children having low weight-for-height, BMI for age, and children falling in Grade 1 and 2 classification of PEM according to IAP
2. Infants below 6 months of age and children above 5 years of age
3. Children suffering from infectious diseases such as tuberculosis, human immunodeficiency virus
4. Diagnosed cases of hyperthyroidism, malabsorption syndrome, and congenital anomalies
5. Children/guardians who are not ready to give informed/written consent for the study
6. Children suffering from complicated SAM.

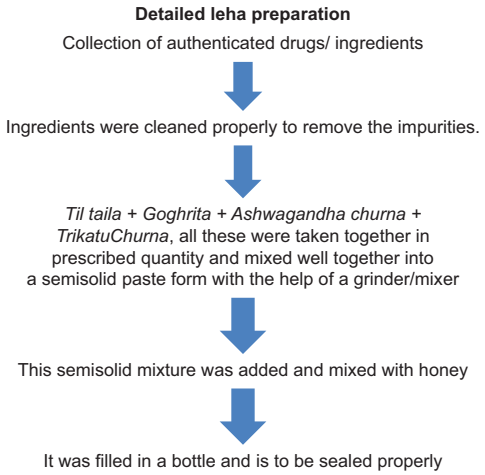
### Control drug: RUTF

RUTF was used as the standard control intervention in the

present study according to WHO and IAP recommendations for management of severe acute malnutrition.

### Detailed drug preparation

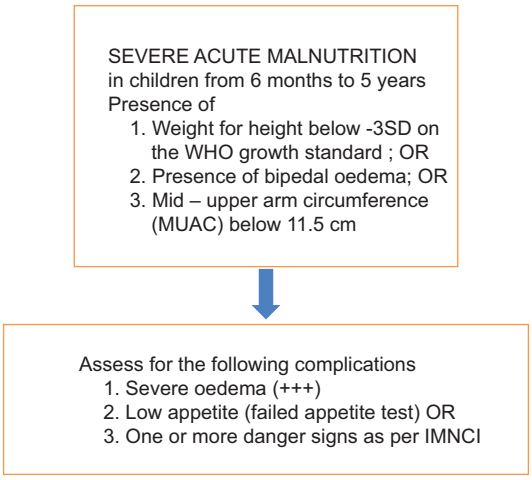
The *Nutrileha* was prepared using the following method




### Assessment criteria

#### *Subjective criteria*

Based on the clinical assessment and screening criteria mentioned here, patients suffering from Grade 3 and 4 symptoms of *Karshya* (protein-energy malnutrition) will only be included for the study purpose.




### Grading (scoring) of clinical features of Karshya[9]

1. *Dourbalya* (shararika)
2. *Agni* (state of hunger)
3. *Deha kshaya* (appearance by observing Shushka Sphig–Udara–Greeva, Dhamani- jaldarshana.

#### *Dourbalya (Shararika)*

- No weakness
- Occasional weakness without playing
- Weakness without tiredness daily
- Always a weakness.

#### *Agni (status of hunger)*

- The child himself asks for food and takes it properly
- The child himself asks for food, but does not take it adequately
- The child does not ask for food but takes food by request
- The child does not take food even by force.

#### *Deha kshaya*

- Normal (absence of clinical features)
- Deha alpakshaya (mildly emaciated)
- Deha madhyamakshaya (moderately emaciated)
- Deha atikshaya (severely emaciated).

All subjective criteria will be recorded for score in each patient before and after treatment

#### *Objective criteria*

A. Anthropometry

(1) Weight, (2) Height, (3) MAC, (4) BMI, and (5) Weight-for-height.

## OBSERVATION AND RESULTS

### Demographic profile

Significant improvement in Group A (*Nutrileha*) was observed from Day 75 onward in all subjective parameters ($P < 0.05$).

### Objective outcomes

*Nutrileha* showed greater improvements in:

- BMI
- MUAC
- Weight-for-height

Statistical significance increased toward day 90.

### Summary of results

A total of 60 children were enrolled in the trial who received *Nutrileha* and RUTF orally as per the groups. For easy identification, the groups were labeled as Group A (*Nutrileha*) and Group B (RUTF) were given to the groups in whom and were given.

The *Nutrileha* group and the RUTF group showed significant results on subjective parameters such as *Agnimandya*,

| Demographic distribution of study participants (*n*=60) | | | | |
|---|---|---|---|---|
| **Variable** | **Category** | **Group A (*n*=30) <br>Frequency (%)** | **Group B (*n*=30) <br>Frequency (%)** | **Total (*n*=60) <br>Frequency (%)** |
| Gender | Male | 17 (57) | 11 (37) | 28 (47) |
| | Female | 13 (43) | 19 (63) | 32 (53) |
| Diet | Vegetarian | 16 (53) | 14 (47) | 30 (50) |
| | Mixed | 14 (47) | 16 (53) | 30 (50) |
| Socioeconomic status | Middle class | 26 (87 | 26 (87) | 52 (87) |
| | Poor | 4 (13) | 4 (13) | 8 (13) |

| Combined comparisons between Group A (trial drug) and Group B (control drug) in subjective parameters | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Day** | **Group** | **Mean±SD** | **Median** | **Mean difference (% effect)** | **U** | **Effect size** | **Z** | ***P*** | **Remark** |
| *DOURBALYA* | Day 15 | A | 2.97±0.18 | 3 | 0.03 (0.0) | 435.0 | 0.129 | 1.00 | 0.317 | NS |
| | | B | 3.00±0.00 | 3 | | | | | | |
| | Day 30 | A | 2.43±0.57 | 2 | 0.20 (5.8) | 369.5 | 0.177 | 1.37 | 0.170 | NS |
| | | B | 2.63±0.49 | 3 | | | | | | |
| | Day 45 | A | 2.07±0.37 | 2 | 0.10 (2.6) | 407.5 | 0.130 | 1.01 | 0.310 | NS |
| | | B | 2.17±0.38 | 2 | | | | | | |
| | Day 60 | A | 1.77±0.43 | 2 | 0.13 (3.7) | 390.0 | 0.177 | 1.37 | 0.169 | NS |
| | | B | 1.90±0.31 | 2 | | | | | | |
| | Day 75 | A | 1.20±0.48 | 1 | 0.30 (9.6) | 322.5 | 0.288 | 2.23 | 0.026 | MS |
| | | B | 1.50±0.51 | 1.5 | | | | | | |
| | Day 90 | A | 0.93±0.45 | 1 | 0.30 (9.7) | 329.0 | 0.321 | 2.49 | 0.013 | MS |
| | | B | 1.23±0.43 | 1 | | | | | | |
| *AGNI* | Day 15 | A | 2.77±0.43 | 3 | 0.06 (0.3) | 420.0 | 0.083 | 0.64 | 0.522 | NS |
| | | B | 2.83±0.38 | 3 | | | | | | |
| | Day 30 | A | 2.13±0.35 | 2 | 0.07 (0.6) | 420.0 | 0.089 | 0.69 | 0.492 | NS |
| | | B | 2.20±0.41 | 2 | | | | | | |
| | Day 45 | A | 1.77±0.43 | 2 | 0.10 (1.9) | 405.0 | 0.128 | 0.99 | 0.321 | NS |
| | | B | 1.87±0.35 | 2 | | | | | | |
| | Day 60 | A | 1.30±0.47 | 1 | 0.23 (6.9) | 345.0 | 0.235 | 1.82 | 0.069 | NS |
| | | B | 1.53±0.51 | 2 | | | | | | |
| | Day 75 | A | 0.80±0.41 | 1 | 0.30 (9.8) | 324.0 | 0.387 | 3.00 | 0.003 | S |
| | | B | 1.10±0.31 | 1 | | | | | | |
| | Day 90 | A | 0.47±0.51 | 0 | 0.40 (13.5) | 278.0 | 0.391 | 3.03 | 0.002 | S |
| | | B | 0.87±0.43 | 1 | | | | | | |
| *DEHA KSHAYA* | Day 15 | A | 2.93±0.25 | 3 | 0.04 (1.3) | 435.0 | 0.076 | 0.59 | 0.557 | NS |
| | | B | 2.97±0.18 | 3 | | | | | | |
| | Day 30 | A | 2.63±0.49 | 3 | 0.17 (5.7) | 375.0 | 0.183 | 1.42 | 0.155 | NS |
| | | B | 2.80±0.41 | 3 | | | | | | |
| | Day 45 | A | 2.03±0.18 | 2 | 0.24 (8.1) | 345.0 | 0.324 | 2.51 | 0.012 | MS |
| | | B | 2.27±0.45 | 2 | | | | | | |
| | Day 60 | A | 1.87±0.35 | 2 | 0.10 (3.4) | 405.0 | 0.179 | 1.39 | 0.165 | NS |
| | | B | 1.97±0.18 | 2 | | | | | | |
| | Day 75 | A | 1.33±0.48 | 1 | 0.34 (11.4) | 300.0 | 0.330 | 2.56 | 0.010 | S |
| | | B | 1.67±0.48 | 2 | | | | | | |
| | Day 90 | A | 0.87±0.35 | 1 | 0.33 (11.1) | 312.0 | 0.407 | 3.15 | 0.002 | S |
| | | B | 1.20±0.41 | 1 | | | | | | |

| Comparison of anthropometric parameters between Group A and Group B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Observation day** | **Parameter** | **Group A mean±SD** | **Group B mean±SD** | **Mean difference (effect %)** | **SE of difference** | ***t*-value** | ***P*-value** | **Remark** |
| Day 15 | Weight | 9.17±2.47 | 9.70±2.30 | 0.524 (0.7) | 0.615 | 0.85 | 0.398 | NS |
| | Height | 88.67±17.74 | 93.17±15.79 | 4.50 (0.0) | 4.336 | 1.04 | 0.304 | NS |
| | Mid-arm circumference | 11.94±1.58 | 11.94±1.39 | 0.003 (0.2) | 0.384 | 0.01 | 0.993 | NS |
| | BMI | 11.91±2.39 | 11.37±2.28 | 0.541 (0.8) | 0.602 | 0.90 | 0.373 | NS |
| Day 30 | Weight | 9.50±2.45 | 9.96±2.31 | 0.46 (1.6) | 0.616 | 0.75 | 0.458 | NS |
| | Height | 88.67±17.74 | 93.17±15.78 | 4.50 (0.0) | 4.334 | 1.04 | 0.303 | NS |
| | Mid-arm circumference | 12.10±1.52 | 12.08±1.33 | 0.014 (0.3) | 0.369 | 0.04 | 0.971 | NS |
| | BMI | 12.38±2.53 | 11.70±2.35 | 0.687 (1.9) | 0.630 | 1.09 | 0.281 | NS |
| Day 45 | Weight | 9.86±2.45 | 10.23±2.31 | 0.376 (2.8) | 0.614 | 0.61 | 0.542 | NS |
| | Height | 89.04±17.57 | 93.41±15.76 | 4.367 (0.2) | 4.309 | 1.01 | 0.315 | NS |
| | Mid-arm circumference | 12.33±1.57 | 12.30±1.35 | 0.027 (0.5) | 0.378 | 0.07 | 0.944 | NS |
| | BMI | 12.77±2.63 | 11.98±2.43 | 0.79 (2.7) | 0.654 | 1.21 | 0.232 | NS |
| Day 60 | Weight | 10.22±2.47 | 10.50±2.33 | 0.286 (4.0) | 0.620 | 0.46 | 0.646 | NS |
| | Height | 89.31±17.71 | 93.81±15.95 | 4.50 (0.1) | 4.352 | 1.03 | 0.305 | NS |
| | Mid-arm circumference | 12.46±1.51 | 12.50±1.31 | 0.037 (0.1) | 0.366 | 0.10 | 0.92 | NS |
| | BMI | 13.19±2.74 | 12.22±2.52 | 0.973 (4.2 | 0.680 | 1.43 | 0.158 | NS |
| Day 75 | Weight | 10.59±2.46 | 10.78±2.35 | 0.193 (5.2) | 0.621 | 0.31 | 0.757 | NS |
| | Height | 89.68±17.78 | 94.18±15.91 | 4.50 (0.1) | 4.357 | 1.03 | 0.306 | NS |
| | Mid-arm circumference | 12.70±1.52 | 12.77±1.34 | 0.073 (0.4) | 0.370 | 0.20 | 0.843 | NS |
| | BMI | 13.61±2.95 | 12.46±2.61 | 1.151 (5.7) | 0.719 | 1.60 | 0.115 | NS |
| Day 90 | Weight | 11.00±2.48 | 11.06±2.37 | 0.057 (6.9) | 0.625 | 0.09 | 0.928 | NS |
| | Height | 89.72±17.76 | 94.25±15.84 | 4.533 (0.1) | 4.345 | 1.04 | 0.301 | NS |
| | Mid-arm circumference | 12.82±1.50 | 12.88±1.40 | 0.057 (0.2) | 0.375 | 0.15 | 0.88 | NS |
| | BMI | 14.17±3.17 | 12.77±2.69 | 1.395 (7.7) | 0.752 | 1.86 | 0.069 | |

SD: Standard deviation, BMI: Body mass index, SE: Standard errors

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**Table 1:** Posology

| Group | Sample size | Intervention | Dose and frequency | Anupan | Duration | Follow up |
|---|---|---|---|---|---|---|
| Group A | 30 | *Nutrileha*[6] | 1 tsp. twice daily | _ | 90 days | 15th, 30th, 45th, 60th, 75th, and 90th day |
| Group B | 30 | RUTF[10,18] | 200 kcal/kg/day | _ | 90 days | 15th ,30th, 45th, 60th , 75th, and 90th day |

RUTF: Ready-to-use therapeutic food

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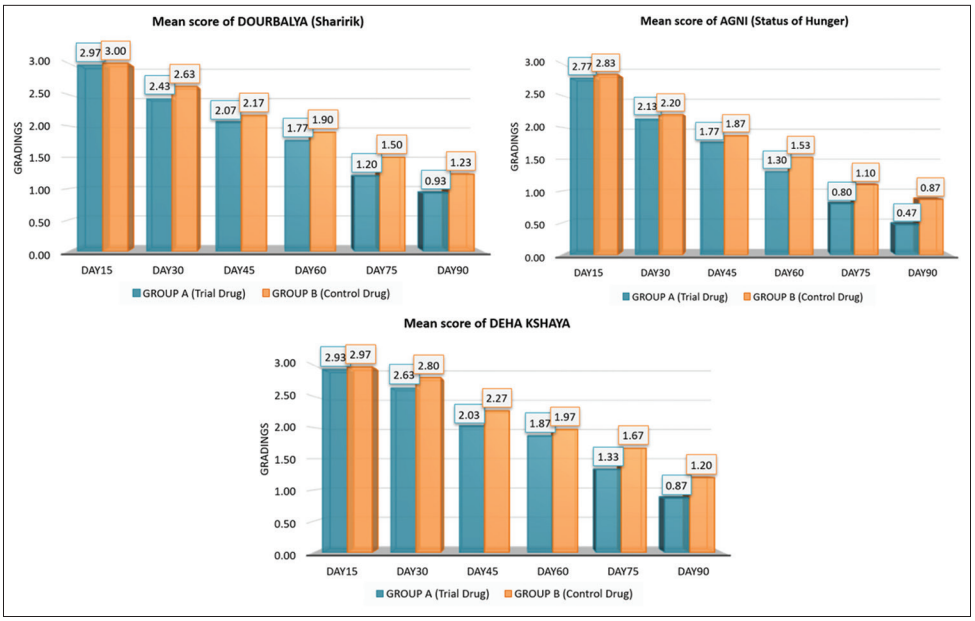
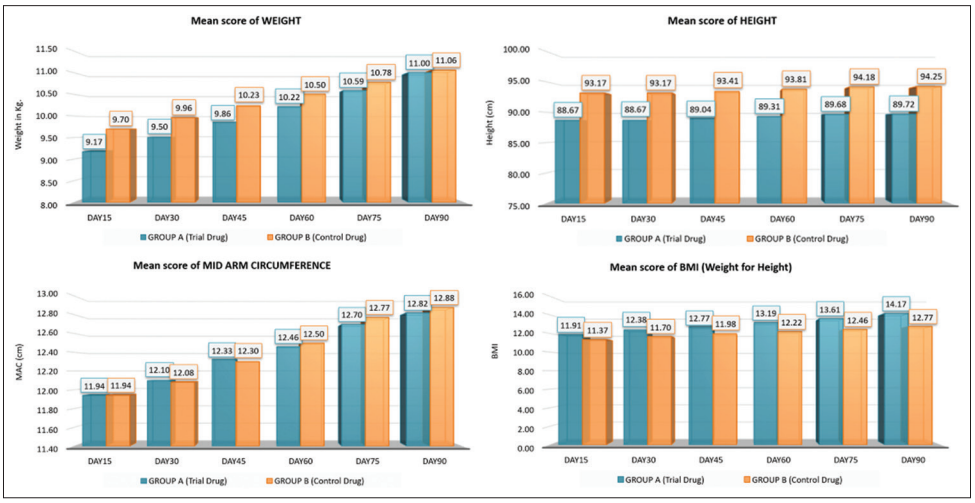
**Table 2:** *Rasapanchak* of all ingredients of *Nutrileha*[7,8]

| S. no. | Name of Herb | ***Rasa*** **(taste)** | ***Virya*** **(potency)** | ***Vipaka*** **(rasa after digestion)** | ***Guna*** **(properties)** | ***Pradhan karma*** **(therapeutic actions)** |
|---|---|---|---|---|---|---|
| 1 | *Ashwagandha* | *Katu*, *Tikta*, and *Kashaya* | *Ushna* | *Katu* | *Laghu* | *Balya, rasayana* (by *Bhaisajya ratnavali*/190) |
| 2 | *Til tail* | *Madhura Kashaya* | *Ushna* | *Madhura* | *Snigdhavataghna* | *Balya, tvachya* (by *Charaka sutra*/27) |
| 3 | *Goghrita* | *Madhura* | *Sheeta* | *Madhura* | *Snigdha Pittavatahara* | *Balakara, pushtikara* (by *Yogaratnakar* 106) |
| 4 | *Madhu* | *Kashaya*, *Madhura* | *Ushna* \ | *Madhura* \ | *Laghu, grahi, yogavahi* | *Tridoshahara* by *Yogaratnakar*/130) |
| 5 | *Trikatu* | *Katu* | *Ushna* | *Katu* | *Laghu, Tikshna* | *Deepana*, *pachana* (by *Sharanghdhara samhita* 6/12) |




AQ9 **Figure 1:** Distribution of patients according to subjective parameters




AQ9 **Figure 2:** Distribution of patients according to objective parameters

*Dehakshaya*, *Dourbalya,* and on objective parameters such as weight, height, and weight-for-height, MAC, and BMI.

The statistical analysis using Mann–Whitney U tests confirmed moderate significance in subjective parameters, whereas objective parameters showed comparable efficacy between the two interventions.

It can be concluded that Group A (trial drug), *Nutrileha, i*s much better than or more effective than Group B (control drug) RUTF in the effectiveness of the drug in the management of *Karshya*, in improving weight-for-height and MUAC in children with SAM, thus bridging the gap identified.

## DISCUSSION

Discussion is an important part of a research work where the findings of the whole work are discussed based on some scientific evidence and supportive data. It can either support the hypothesis or revolutionize the concept totally. In this part, the data obtained throughout the clinical study on the efficacy of *Nutrileha* and RUTF are also subjected to discussion in detail, along with the discussion on disease, trial drugs, and observations made during the trial.

### Discussion of *Karshya* (PEM)

Ayurveda explains eight undesirable individuals for treatment, among whom "*Atikrusha*" (extremely emaciated) is one. The explanation of the disease *Karshya* is to be drawn from this context, that it could be the primary stage of malnourishment where the clinical features may not be fully manifested, and so this condition can

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**Table 3:** Contents of RUTF[10]

| S. No. | Ingredient | Percentage weight |
|---|---|---|
| 1 | Peanut butter/paste | 30 |
| 2 | Vegetable oil | 18 |
| 3 | Full-fat milk/milk solids | 20 |
| 4 | Sugar | 29 |
| 5 | Mineral-vitamin mix | 2 |

RUTF: Ready-to-use therapeutic food

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**Table 4:** Indian Academy of Pediatrics classification of protein-energy malnutrition[10,18]

| S. No. | Grade of malnutrition | Weight for age of the standard (median) % |
|---|---|---|
| 1 | Normal | >80 |
| 2 | Grade 1 | 71–80 (mild malnutrition) |
| 3 | Grade 2 | 61–70 (moderate malnutrition) |
| 4 | Grade 3 | 51–60 (severe malnutrition) |
| 5 | Grade 4 | <50 (very severe malnutrition) |

be managed successfully with therapeutic interventions. While analyzing the explanation of etiology, pathogenesis, clinical features, and treatment modalities of *Karshya*, all the parameters fall in the category of nutritional deficiency and its modifications.

*Karshya* is one of the major diseases explained in Ayurveda as *Swatantra vyadhi* (independent manifestation of disease) or *Paratantra Vyadhi* (manifest along with other diseases). By analyzing the causative factors of *Karshya*, we can understand that it is a disease of nutritional deficiency, which is mentioned as *Apatarpana Janya Vyadh*i. *Rasa Dhatu* is the responsible factor for balancing nutritional level in the body, which is indicated in its prime function as "*Preenana*" (nourishment). Another important function of *Rasa Dhatu* is nourishment of *Rakta Dhatu*, which again indicates nourishment of successive body tissues. By this, it can be said that if there is improper functioning of *Rasa Dhat*u, it affects the status of all the body tissues and can cause malfunctioning of those, which in turn will affect the normal physiology and nutritional status of the body. In the pathological condition of *Rasa Dha*tu, it is also mentioned that when there is a reduction of this *Dhatu* in the body, there will be "*Shosha*," which indicates a deficiency state in the body. By all these descriptions, it can be said that *Karshy*a is a condition where there is depletion of *Rasa Dhatu*, and so replenishment of *Rasa Dhatu* will correct and cure the pathology.

Under the ambit of *Karshya,* PEM is the best-suited clinical entity from the contemporary system of medicine. PEM is defined as an outcome of insufficient food intake, repeated infectious diseases, and deficient micronutrients, which results in stunting and wasting. Although the clinical entity is named as undernutrition, well-defined explanations are available about PEM. PEM is defined as a range of pathological conditions that arise from a coincidental lack in varying proportions of proteins and calories, occurring most frequently in infants and young children and commonly associated with infection.[10,18] In Ayurveda, while describing the pathophysiology of *Karshya*, there is no specific mention of any single factor that is affected or going into a deficiency state. This condition may result from the deficiency of a single factor. In Ayurveda, it is understood as both a pathological and physiological state—physiological in individuals with a naturally lean constitution and during the aging process. Thus, when there is an association of specific etiological factors, such as reduced consumption of food as a whole, intake of dry or junk food and drinks, excessive physical exercise, stressful activities, reduced sleep, association of chronic disorders and psychological disturbances causing *Karshya*, this clinical condition is considered under undernutrition, which has been adopted in the present study. As in PEM, *Karshya* cannot be an accidental lack of nutrients, but has some specific etiology. Like undernutrition, *Karshya* is also a deficiency disorder where there is both micro- and macro-nutrient deficiency. It is mentioned that mild undernutrition results in some decrease in weight for age, and only in severe undernutrition, which is also termed as mild PEM, marked deficits in the same parameter occur along with wasting. In the present study, only moderate-to-severe undernutrition was considered. From all the above facts, it can be said that the attempt made in the present study to correlate malnutrition with *Karshya* stands considerable.

## Drug

In the line of management of *Karshya*, as explained by Acharya, a multidimensional approach comprising both external and internal therapy, along with modification in diet and lifestyle, is found. Both external and internal *Snehana* have been stressed upon well, along with the usage of *LaghuSantarpana* (Anabolic drugs that are easily digestible) and *Vrushya* (Aphrodisiac). Ghee is considered to be the best choice among the *Sneha dravya* (Oleaginous substance) in Ayurveda, which is also praised to have a special characteristic to assimilate the properties of the herb it is processed with without losing its own qualities. It also has qualities such as increasing metabolism, nourishing, increasing *Kapha dosha* and *Rasa, Meda and Shukra Dhatu*, sweet in taste, cold in potency, and specifically acting on the disease *Shosha* (a condition where there is malnourishment of all the seven *Dhatu*). Considering the above facts, an *anubhuta yoga*, which acts as both *Laghu, Agnidipaka, Santarpana*, and *Snehana,* was selected for oral administration in one group. The trial drug was prepared in *Rasashala*, and after analytical study, it was found to be devoid of microorganisms and neutral, which proved safety for intervention. The ingredients of *Nutrileha* used were *Ashwagandha*, *Trikatu*, *Goghrita*, *Tiltail,* and *Madhu, as Ashwagandha* has *Madhura*, *Kashaya*,

*Tiktarasa, Kapha*, *Vatashamaka*, *Brimhana*, *Balya*, and *Rasayana* properties. *Trikatu* acts as a remedy for tastelessness (*Arochaka*), disturbed digestion (*Agnimandya* and *Amadosa*). *Trikatu* acts primarily by its effect on the stomach, liver, and pancreas. In the stomach, it increases the production of digestive juices, thereby stimulating digestion. In the liver, it acts as a cholagogue and increases the production of bile salts by stimulating gallbladder functioning. *Trikatu* also has an influence on pancreatic functioning. In a nutshell, *Trikatu* affects the overall digestive system along with its curative effects on respiratory, urinary, immunity, skin, and metabolic systems of our body as it contains *Ghrita*, which is also indicated in *Karshya* treatment, its *Madhurarasatamka*, *gurusnigdhaguna*, *sheetavirya*, *Madhuravipaki*, *rasayana*, *jeevaniya*, *agnidipan*, *balakarka*, *buddhi,* and *smrutivardhaka*. As a *Prakshepa Dravya*, honey (*Madhu*) is one among the food articles mentioned in Ayurveda, having a sweet taste, and it increases taste because of it. It is easily acceptable in children, so it shows effective treatment in children.

### Comparison with RUTF

RUTF is recognized as an international standard for SAM management due to its high-calorie, ready-to-use, nutrient-dense composition.

However:

- RUTF mainly offers external caloric supplementation.
- Nutrileha, by contrast, improves both Agni and *Dhatu-poshana*, providing sustained improvement in digestive capacity and physiological assimilation.
- This translated into better MUAC, W/H, and BMI gains.

In addition, *Nutrileha* is culturally acceptable, palatable, affordable, and uses locally available ingredients, increasing its feasibility for large-scale community adoption.

## CONCLUSION

- *Nutrileha* demonstrated superior efficacy compared to RUTF in improving both subjective and objective clinical parameters of Karshya/SAM. Its *Deepana, Pachana, Brimhana,* and *Rasayana* actions contributed to enhanced digestion, absorption, weight gain, MUAC, and BMI improvements.
- *Nutrileha* serves as an effective, affordable, culturally acceptable Ayurvedic nutritional supplement for the management of SAM in children.
- Both the drugs and modalities were well-tolerated by the children, and so it can be suggested in routine pediatric practice; however, RUTF is not cost-effective and not easily available everywhere.
- *Nutrileha* and RUTF internally had a major role in relieving all manifested clinical features within the duration of 90 days. *Nutrileha* improved digestive power and absorption better than RUTF.
- Hence, it can be concluded that Group A (*Trial Drug*) *Nutrileha i*s much better than or more effective than Group B (control drug) RUTF in the effectiveness of the drug in the management of *Karshya*, in improving weight-for-height and MUAC in children with SAM, thus bridging the gap identified.

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