

Efficacy of Fresh Ash Gourd (*Benincasa hispida*) Juice in Modulating Gastric Acidity Symptoms and Gastrointestinal Quality of Life in Patients with Mild to Moderate Hyperacidity

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Abstract

Background: Hyperacidity (acid dyspepsia) is a common gastrointestinal disorder characterised by excessive gastric acid secretion and symptoms such as heartburn, regurgitation, and epigastric discomfort. Ash gourd (*Benincasa hispida*) has traditional use in gastrointestinal disorders and possesses antioxidant and gastroprotective properties.

Objectives: To evaluate the efficacy of fresh ash gourd juice in reducing gastrointestinal symptoms and improving gastrointestinal quality of life in patients with mild to moderate hyperacidity.

Materials and Methods: A single-group pre–post interventional study was conducted on 10 participants (9 female, 1 male; mean age 31.7 ± 13.7 years) with mild to moderate hyperacidity at GNCYMC&H, Mysore. Fresh ash gourd juice was administered daily for 10 days. Outcomes were assessed using the Gastrointestinal Symptom Rating Scale (GSRS), Gastrointestinal Quality of Life Index (GIQLI), and body mass index (BMI) before and after the intervention. Data were analysed using Wilcoxon signed-rank and paired t-tests; effect sizes were expressed as Cohen's d.

Results: All outcomes improved significantly. Mean GSRS decreased from 31.80 ± 13.07 to 8.30 ± 4.06 ($\Delta -23.50$, $p = 0.002$, $d = -2.35$). GIQLI increased from 76.60 ± 15.03 to 110.70 ± 12.68 ($\Delta +34.10$, $p = 0.002$, $d = 3.60$). BMI decreased from 25.65 ± 4.94 to 25.00 ± 4.74 ($\Delta -0.65$, $p = 0.002$, $d = -1.55$). Every participant improved on every measure.

Conclusion: Fresh ash gourd juice produced highly significant short-term reductions in gastrointestinal symptoms and BMI and a large improvement in gastrointestinal quality of life in patients with mild to moderate hyperacidity. Larger controlled trials are recommended.

Keywords: *Hyperacidity; ash gourd; Benincasa hispida; GSRS; GIQLI; gastrointestinal quality of life; naturopathy*

1. Introduction

Hyperacidity refers to excessive gastric hydrochloric acid secretion and is associated with heartburn, acid regurgitation, epigastric burning, bloating, and related dyspeptic symptoms [1,2]. Globally, gastritis and related acid-related disorders affect a substantial proportion of the population, with higher reported burdens in developing countries [3,4]. Dietary factors, stress, and lifestyle contribute to symptom burden.

Conventional management includes H₂-receptor antagonists, proton-pump inhibitors, and lifestyle advice [18]. Naturopathic approaches emphasise dietary regulation, therapeutic juices, hydrotherapy, and stress reduction [19,21]. Ash gourd (*Benincasa hispida*) is traditionally used for gastrointestinal complaints and has been reported to possess antioxidant, anti-inflammatory, and gastroprotective properties [22–28]. The present study evaluated a 10-day course of fresh ash gourd juice on validated symptom and quality-of-life measures in mild to moderate hyperacidity.

2. Aims and Objectives

Primary objectives:

1. To evaluate the efficacy of fresh ash gourd juice in modulating gastric acidity symptoms using the Gastrointestinal Symptom Rating Scale (GSRS).
2. To evaluate changes in gastrointestinal quality of life using the Gastrointestinal Quality of Life Index (GIQLI).

Secondary objective:

3. To assess changes in body mass index (BMI) before and after the intervention.

3. Review of Literature

Gastric acid secretion is regulated by neural, endocrine, and paracrine pathways involving acetylcholine, gastrin, histamine, and inhibitory mediators such as somatostatin and prostaglandins [5–16]. Excess acid contributes to mucosal irritation and reflux-related symptoms. Ash gourd (*Benincasa hispida*) contains bioactive constituents with reported gastroprotective, antioxidant, and anti-inflammatory effects in experimental models [22,27,28]. Clinical data on fresh juice in hyperacidity remain limited, supporting the present pilot evaluation.

4. Materials and Methods

4.1 Study Design and Setting

A single-group pre–post interventional study was conducted at the Outpatient Department of Government Nature Cure and Yoga Medical College & Hospital (GNCYMC&H), Mysore.

4.2 Participants

Ten participants (9 female, 1 male; mean age 31.7 ± 13.7 years, range 18–55) with mild to moderate hyperacidity were enrolled. All completed the protocol.

Inclusion criteria:

- Mild to moderate hyperacidity based on clinical history and symptom assessment
- Age 18–55 years
- Willingness to provide written informed consent

Exclusion criteria:

- Severe or complicated acid-related disease requiring urgent pharmacological or endoscopic management
- Major systemic illness or contraindication to the intervention

4.3 Ethical Considerations

Written informed consent was obtained. Participation was voluntary and confidentiality was maintained.

4.4 Intervention

Participants received freshly prepared ash gourd (*Benincasa hispida*) juice daily for 10 consecutive days under supervision. No concurrent pharmacological acid-suppressant therapy was initiated as part of the protocol.

4.5 Outcome Measures

Gastrointestinal Symptom Rating Scale (GSRS): Lower scores indicate fewer/less severe gastrointestinal symptoms.

Gastrointestinal Quality of Life Index (GIQLI): Higher scores indicate better gastrointestinal quality of life.

Body Mass Index (BMI, kg/m^2).

4.6 Statistical Analysis

Descriptive statistics were calculated. Normality of difference scores was assessed by Shapiro–Wilk test. Wilcoxon signed-rank (primary) and paired t-tests were reported. Effect size was Cohen's d (paired). Significance was set at two-tailed $\alpha = 0.05$.

5. Results

All 10 participants completed the intervention (9 female, 1 male; mean age 31.7 ± 13.7 years).

5.1 Primary Outcomes

Table 1 presents descriptive statistics and Table 2 summarises change scores and inferential results.

Outcome	Time	Mean	SD	Median	Min	Max
BMI (kg/m ²)	Pre	25.65	4.94	27.1	15.4	31.4
	Post	25.00	4.74	26.5	14.9	30.6
GSRS	Pre	31.80	13.07	29.5	15.0	61.0
	Post	8.30	4.06	6.5	4.0	16.0
GIQLI	Pre	76.60	15.03	71.0	64.0	110.0
	Post	110.70	12.68	113.0	87.0	132.0

Table 1. Descriptive statistics for all outcome measures (n = 10)

Outcome	Mean Δ	SD Δ	Wilcoxon p	t-test p	Cohen's d	Improved
BMI (kg/m ²)	-0.65	0.42	0.002	0.0008	-1.55	10/10
GSRS	-23.50	10.00	0.002	<0.0001	-2.35	10/10
GIQLI	+34.10	9.47	0.002	<0.0001	3.60	10/10

Table 2. Change scores and inferential statistics (n = 10). All participants improved on every measure.

5.2 Graphical Representation of Results

Figure 1 presents grouped mean $\pm$ SD comparisons. Figure 2 shows individual outcome panels.

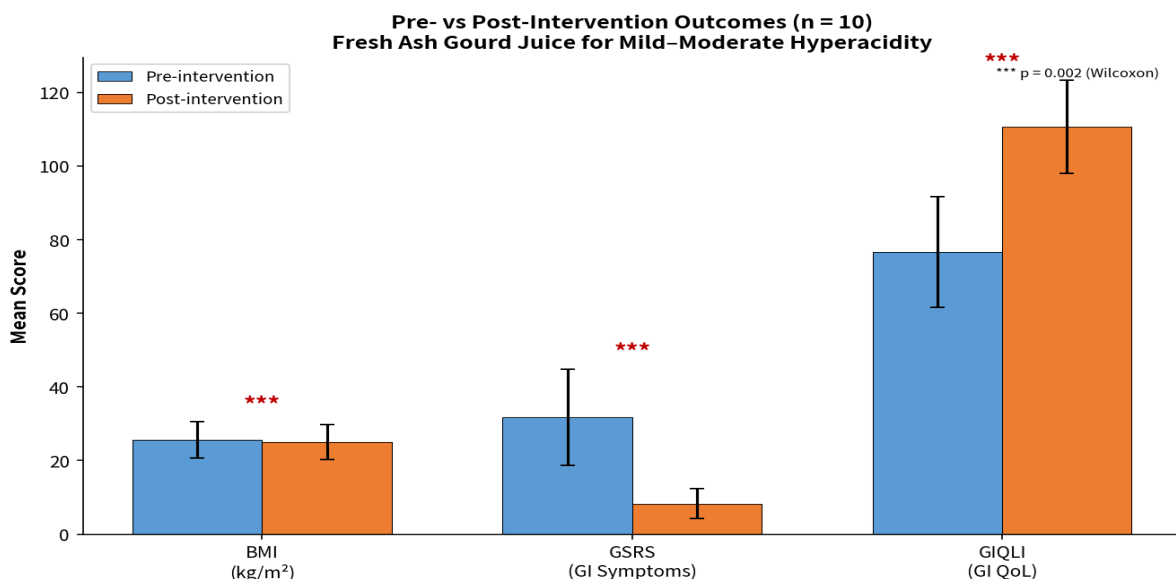


Figure 1. Mean pre- and post-intervention scores ($\pm$ SD) for BMI, GSRS, and GIQLI (n = 10). *** p = 0.002.

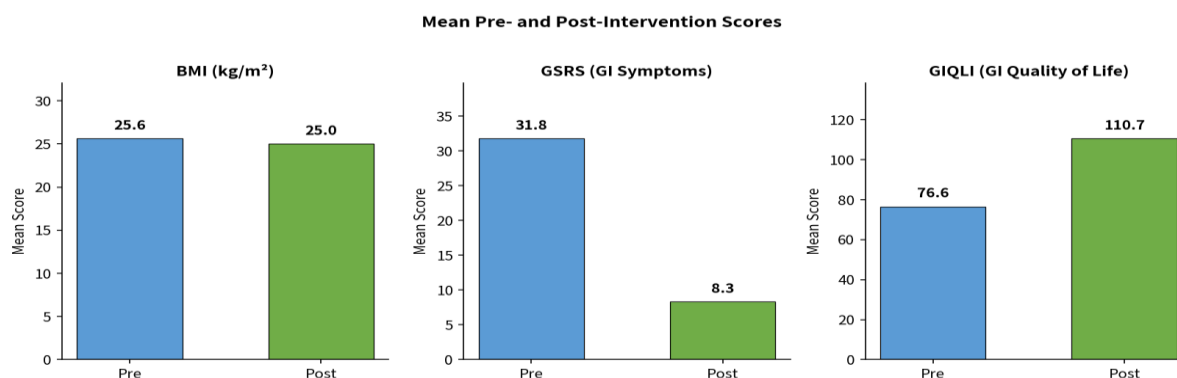


Figure 2. Mean pre- and post-intervention scores for each outcome measure.

6. Discussion

In this single-group pre–post study, a 10-day course of fresh ash gourd juice produced highly significant reductions in gastrointestinal symptom burden (GSRS) and BMI, together with a large improvement in gastrointestinal quality of life (GIQLI). Effect sizes were large to extremely large, and every participant improved on every measure.

These findings are consistent with the traditional use of *Benincasa hispida* in digestive disorders and with experimental evidence of antioxidant, anti-inflammatory, and gastroprotective effects [22,27,28]. The magnitude of change in GSRS and GIQLI over a short intervention period is clinically noteworthy, although the absence of a control group precludes definitive causal attribution.

Limitations include the small sample size ($n = 10$), predominance of female participants, lack of a concurrent control or placebo group, short duration, single-centre design, and absence of objective acid-output or endoscopic measures. Larger randomised controlled trials with longer follow-up are required.

Nevertheless, the consistency of response, large effect sizes, safety, and practicality of supervised ash gourd juice support further evaluation as a non-pharmacological option for mild to moderate hyperacidity.

7. Conclusion

Within the limitations of this single-group pre–post study, fresh ash gourd (*Benincasa hispida*) juice significantly reduced gastrointestinal symptoms and BMI and substantially improved gastrointestinal quality of life in patients with mild to moderate hyperacidity. The intervention was safe and well tolerated. These preliminary findings support its potential as a naturopathic adjunct and warrant confirmation in larger controlled trials.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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