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Original Research Article

Efficacy and tolerability of a multi-ingredient nutraceutical on facial skin ageing parameters and self-reported wellbeing: a prospective, open-label and single-arm pilot study

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ABSTRACT

Background: Skin ageing involves interconnected changes in extracellular matrix integrity, hydration, oxidative stress and cellular resilience. This study evaluated the efficacy and tolerability of RESET by IQ HEALTH™, a multi-ingredient oral nutraceutical, in adults with visible facial skin ageing.
Methods: This prospective, open-label, single-arm clinical study enrolled healthy adults aged 35-55 years with facial skin ageing. Participants consumed one sachet daily for 60 days. Facial firmness (Cutometer R0), elasticity (Cutometer R7), and hydration [MoistureMeter SC (MMSC)] were assessed at baseline, day 30, and day 60. Participant-reported skin and wellness outcomes and tolerability were assessed descriptively.
Results: Thirty-four participants-initiated supplementation and 33 completed the study. At day 60, firmness improved by 38.9%, elasticity by 8.9%, and hydration by 19.2% from baseline (all $p<0.001$). Significant changes were observed at day 30. At day 60, 84.9% reported firmer/tighter facial skin, 81.8% reported a younger appearance, and 90.9% reported improved moisturization and hydration. Exploratory improvements were also reported in energy, joint comfort, sleep quality, fatigue, relaxation, and muscle soreness. The product was generally well tolerated; gastrointestinal symptoms were mild and infrequent, with no serious adverse events or treatment-related discontinuations.
Conclusions: Daily supplementation with RESET by IQ HEALTH™ for 60 days was associated with improvements in facial skin firmness, elasticity, and hydration, together with favourable participant-reported skin and wellness outcomes. These findings are preliminary given the single-arm, open-label design and small sample size and require confirmation in randomized, placebo-controlled studies.

Keywords: Skin ageing, Nutraceutical, Nutricosmetics, Skin hydration, Skin elasticity, Healthy ageing

INTRODUCTION

Skin ageing is a clinically relevant and visible manifestation of biological ageing, reflecting the combined effects of intrinsic chronological processes and cumulative environmental exposure.[1,2] Intrinsic ageing is affected by genetically regulated cellular turnover, hormonal alterations, remodelling of the dermal matrix and reduction in repair capacity, whereas extrinsic ageing is primarily dictated by ultraviolet radiation, pollution, lifestyle stressors and other exposome-related insults.[1-3] Excess production of reactive oxygen species (ROS) and chronic skin inflammation promote degradation of collagen and elastin and remodelling of the extracellular

matrix, processes that contribute to impaired skin barrier function.[4,5] Clinically, these processes manifest as dryness, dullness, loss of firmness and elasticity, uneven texture, fine lines, wrinkles, together with impaired skin hydration and barrier function.[2,3]

The biological mechanisms underlying skin ageing overlap substantially with systemic ageing pathways.[1,2] Reactive oxygen species produced during normal metabolism and augmented by ultraviolet radiation and pollutants may exceed endogenous antioxidant defences resulting in oxidative damage to lipids, proteins and DNA.[5] Oxidative stress in skin activates inflammatory and stress-response signalling and contributes to inflammaging, and impairs fibroblast function and increases matrix metalloproteinase activity.[2,5,6] These changes accelerate degradation of collagen and elastin, reduce new procollagen synthesis and disrupt extracellular matrix integrity, thereby weakening dermal mechanical integrity.[4,6] Also, ageing is associated with changes in glycosaminoglycan biology, including reduced or redistributed hyaluronic acid, which is a key water-binding molecule that supports skin hydration, turgor and viscoelasticity.[2,3] Mitochondrial dysfunction increases ROS production and causes energy imbalance, creating a feed-forward cycle where oxidative stress, chronic low-grade inflammation, ECM degradation, impaired hydration and barrier dysfunction together lead to functional and visible skin ageing.[1,3,5] Importantly, oxidative stress, chronic low-grade inflammation, mitochondrial dysfunction, and extracellular matrix deterioration are interconnected processes implicated in both skin and systemic ageing. Targeting these interconnected pathways may therefore provide an integrated approach to healthy ageing while simultaneously supporting skin structure and function.[1-3,5]

Topical approaches remain central to skin care, but they primarily act at or near the site of application and may not fully address systemic determinants of skin ageing.[1,2] However, because skin ageing is influenced by systemic biological processes, orally administered nutraceuticals may complement topical interventions by targeting pathways inaccessible to local therapy.[7] The "inside-out" nutraceutical concept is based on the premise that orally delivered nutrients and bioactives can support skin through systemic pathways, including antioxidant defence, inflammatory regulation and maintenance of extracellular matrix homeostasis.[7] Oral interventions may therefore complement topical regimens by supporting collagen synthesis, glycosaminoglycan metabolism, dermal hydration, mitochondrial function and host-microbiome interactions.[3,8-11,17,18,22,23] Interest in nutricosmetics has grown as clinical studies have reported benefits for selected oral ingredients, including hyaluronic acid and microbial preparations, although the magnitude and consistency of effects depend on ingredient type, dose, population, duration and outcome measures.[8,22,23] These considerations provide a rationale for investigating multi-target oral formulations designed to address multiple convergent pathways rather than a single isolated endpoint.[7]

The investigational formulation was developed as a multi-pathway healthy ageing nutraceutical targeting interconnected biological cascades relevant to skin and systemic ageing. Its ECM-supportive and hydration cluster includes glucosamine hydrochloride, a biochemical precursor of glycosaminoglycans and hyaluronan supporting proteoglycan synthesis and dermal matrix homeostasis alongside hyaluronic acid, which contributes directly to dermal water-binding and viscoelasticity, and glycine, L-proline and L-lysine, which contribute to collagen biosynthesis, with glycine availability linked to the metabolic demands of collagen production and proline and lysine supporting post-translational collagen maturation.[3,8,9,11,12] A second cluster targets antioxidant defence and mitochondrial resilience through Vaccinium corymbosum (blueberry) anthocyanins which neutralise ROS, attenuate UV-induced inflammatory signalling and inhibit matrix metalloproteinase-mediated collagen degradation alongside L-ergothioneine, a diet-derived cytoprotective antioxidant with high tissue retention, and sodium selenite, taurine and L-carnitine, supporting selenoprotein-dependent antioxidant defence, antioxidant defence and mitochondrial biogenesis, and mitochondrial energy metabolism, respectively.[13-18] A third systemic support cluster includes L-citrulline for nitric oxide-mediated microcirculatory support, magnesium bisglycinate as a source of magnesium, an essential cofactor involved in energy metabolism and numerous cellular processes relevant to healthy ageing, Centella asiatica for fibroblast activity, collagen synthesis and pro-angiogenesis effects, L-tyrosine is a precursor of catecholamine neurotransmitters involved in cognitive function and physiological stress responses and Lactobacillus acidophilus for gut-skin axis modulation through systemic immune and inflammatory regulation.[19-24] Together, this multi-target design aims to reduce oxidative and inflammatory burden, preserve ECM integrity, support dermal hydration and barrier function, improve cellular resilience, sustain systemic energy metabolism and maintain physiological systems influencing skin firmness, elasticity and healthy ageing.

Individual ingredients within this formulation have each attracted scientific interest for their respective roles in skin health or systemic ageing, and selected ingredients carry supporting mechanistic or clinical evidence. However, available clinical studies vary considerably in formulation composition, ingredient combinations, dosing, study duration, outcome measures and population characteristics, making it difficult to extrapolate individual ingredient findings to a comprehensive multi-pathway product. To our knowledge, no published clinical evaluation of this specific multi-ingredient formulation exists, and the combined effect of these ingredients on skin ageing parameters and systemic wellbeing in adults has not been assessed.

The present study therefore aimed to evaluate the efficacy and tolerability of "RESET by IQ HEALTH ™" a multi-target healthy ageing oral nutraceutical in adults with visible signs of facial skin ageing over a 60-day intervention period. The primary objective was to assess changes in facial skin biophysical parameters specifically firmness, elasticity and hydration using validated non-invasive instrumental measurements. Secondary objectives included assessment of participant-reported skin appearance and broader wellness outcomes encompassing energy levels, fatigue, sleep quality, joint comfort, relaxation and muscle soreness, which are physiologically relevant to the mitochondrial, microcirculatory and gut-skin axis pathways targeted by the formulation.

METHODS

Study design

This was a monocentric, prospective, open-label, single-arm clinical study conducted over 60 days to evaluate the efficacy and tolerability of the investigational oral nutraceutical RESET by IQ HEALTH™ on facial skin ageing parameters. All participants received the investigational product; no placebo or comparator group was included. The study employed a pre-post design with assessments at baseline (day 0), day 30, and day 60.

The study was conducted between 17 February 2026 and 22 April 2026 at a single dermatology research centre in Mumbai, India (C.L.A.I.M.S. Pvt. Ltd.) under the supervision of a board-certified dermatologist (Principal Investigator). The trial protocol was reviewed and approved by an independent ethics committee (IEC) (Re-registration No. ECR/245/Indt/MH/2015/RR-22) on 06 February 2026. The study was conducted in accordance with the approved protocol, the Declaration of Helsinki, Indian Council of Medical Research (ICMR) Ethical Guidelines, and Good Clinical Practice (GCP). Written informed consent was obtained from all participants before enrolment.

Setting

Participants were evaluated at screening, baseline (Day 0), day 30, and day 60. Instrument-based skin assessments were carried out on day 0, day 30, and day 60 under a controlled environmental condition (temperature 20-22°C; relative humidity 40-60%). Before each assessment, participants were acclimatized for 45 minutes to minimize environmental variability.

Baseline health evaluation included medical history, physical examination, and laboratory investigations comprising complete blood count (CBC), fasting blood glucose, liver function tests (LFT), uric acid, lipid profile, BUN creatinine and kidney function tests (KFT). These laboratory investigations were repeated at the end of the study to evaluate product safety and tolerability.

Participants

Eligible participants were healthy adults (male or female) aged 35-55 years with visible signs of facial skin ageing (e.g., wrinkles, reduced skin firmness, or dryness) or with or without age-associated complaints such as joint discomfort or low energy. Approximately 60% females and 40% males were targeted for enrolment.

Key inclusion criteria included apparently healthy facial skin, willingness to maintain the usual skincare routine throughout the study, and avoidance of introducing new anti-ageing cosmetic products or nutritional supplements during the study period.

Participants were excluded if they were pregnant or lactating, had known hypersensitivity to any component of the investigational product, had received systemic medications or nutritional supplements that could influence skin condition within one month before enrolment, or had any significant dermatologic or systemic disease that could interfere with study participation. Cosmetic procedures and concomitant use of additional skin supplements were prohibited throughout the study.

Intervention

The investigational product was RESET B IQ HEALTH ™ (IQ Health), an oral nutraceutical powder containing a multi-ingredient formulation comprising *Vaccinium corymbosum* (blueberry) extract, Glucosamine hydrochloride, Hyaluronic acid, Glycine, L-lysine, L-proline, L-citrulline, L-tyrosine, Taurine, L-carnitine, L-ergothioneine, *Centella asiatica*, *Lactobacillus acidophilus*, magnesium bisglycinate, and Sodium selenite.

Participants self-administered one sachet once daily in the evening, dissolved in approximately 150 mL of water, for 60 consecutive days, according to the product instructions. Product compliance was assessed by product count at the study centre and participant verbal confirmation during follow-up visits.

Study procedures

At each assessment visit, facial skin parameters were evaluated using validated non-invasive instrumental techniques under standardized environmental conditions. Skin firmness and elasticity were measured using a Cutometer, while skin hydration was assessed using a MMSC. Standardized digital facial photographs were obtained at each assessment visit while maintaining participant confidentiality. Participants received the investigational product at the baseline visit together with instructions for its use. Self-assessment questionnaires evaluating product efficacy and tolerability were completed at day 30 and day 60. Participants were monitored for adverse events throughout the study. At the

final visit, blood tests were repeated and compared with baseline values to evaluate safety, and any unused study product was collected to assess treatment compliance.

Outcome measures

The primary efficacy outcomes were changes in facial skin firmness, elasticity, and hydration from baseline to day 30 and day 60. Skin firmness (R0) and elasticity (R7) were measured using a Cutometer. R0 (Uf) represents the initial maximum amplitude of skin deformation under suction, with lower values indicating greater skin firmness, whereas R7 represents the skin's biological elasticity (its ability to return to its original position after deformation), with higher values indicating greater elasticity. Skin hydration of the stratum corneum was assessed using a MMSC, with higher values indicating greater skin hydration. All instrumental assessments were performed following a 45-minute acclimatization period under standardized environmental conditions (temperature 20-22°C and relative humidity 40-60%).

Secondary outcomes included participant-reported efficacy and product tolerability. At day 30 and day 60, participants completed standardized self-assessment questionnaires evaluating perceived improvements in skin firmness, hydration, overall skin appearance, and other product-related benefits. Product tolerability was assessed using a structured questionnaire, and all adverse events reported during the study were recorded.

Sample size

This was an exploratory pilot study; therefore, no formal sample size calculation was performed. The target sample size of approximately 30-40 participants was determined pragmatically based on study feasibility and the expected ability to detect within-subject changes over the 60-day intervention period.

Statistical analysis

Statistical analyses were performed using SPSS version 30.0. Continuous variables are presented as mean±standard deviation (SD), whereas categorical variables are presented as frequencies and percentages. Changes in skin biophysical parameters from baseline to day 30 and day 60 were analysed using paired Student's t tests. Responses to self-assessment and tolerability questionnaires are presented descriptively as frequencies and percentages. A two-sided $p<0.05$ was considered statistically significant.

RESULTS

Participant flow

A total of 64 volunteers were screened for eligibility, of whom 26 were excluded as screen failures. Of the remaining 38 eligible individuals, two were lost to follow-up before enrolment. Thirty-six participants subsequently provided written informed consent, of whom two withdrew before initiating the investigational product because of personal reasons. Consequently, 34 participants initiated the intervention at baseline (Day 0). One participant discontinued the study because of a family emergency after the day 30 visit, resulting in 33 participants (97.1%) completing the 60-day intervention.

Table 1: Baseline demographic characteristics of the study participants, (n=33).

Characteristics	Value, N (%)
Number of participants	33
Age, (in years) (mean±SD)	43.7±5.58
Age range, years	35-55
Female	21 (63.6)
Male	12 (36.4)

Baseline characteristics of the participants included in the efficacy analysis are summarized in Table 1. The mean age of the participants was 43.7±5.58 years (range: 35-55 years). The study population comprised 21 women (63.6%) and 12 men (36.4%), all of Indian ethnicity. Baseline laboratory investigations were within normal reference ranges for all participants.

Instrumental evaluation of skin firmness using Cutometer (R0)

As shown in Table 2 and Figure 1, skin firmness improved progressively over the 60-day intervention, as evidenced by a significant reduction in Cutometer R0 values (lower R0 values indicate greater skin firmness). The mean R0 value decreased from 0.36±0.06 at baseline to 0.29±0.06 on Day 30, representing a 19.4% improvement ($p<0.001$), and further decreased to 0.22±0.05 on day 60, corresponding to a 38.9% improvement from baseline ($p<0.001$). The improvement in skin firmness was statistically significant at both follow-up visits compared with baseline.

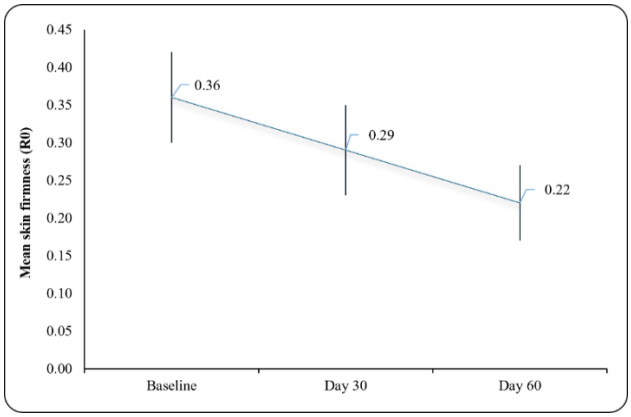


Figure 1: Changes in skin firmness (Cutometer R0) over the study period.

*Data are presented as mean±SD (n=33). Error bars represent SD.

Table 2: Changes in mean skin firmness, elasticity and hydration over the study duration.

Outcomes	Baseline (Day 0)	Day 30		Day 60	
		Value	Change from baseline, % (p value)	Value	Change from baseline, % (p value)
Skin firmness (R0)	0.36±0.06	0.29±0.06	-19.4% (p<0.001)	0.22±0.05	-38.9% (p<0.001)
Skin elasticity (R7)	37.41±6.44	38.97±6.55	+4.2% (p<0.001)	40.74±6.49	+8.9% (p<0.001)
Skin hydration (MMSC)	24.82±9.81	26.92±9.36	+8.4% (p<0.001)	29.59±9.41	+19.2% (p<0.001)

*R0 (Uf)-initial maximum skin deformation under suction; lower values indicate greater skin firmness. R7-biological elasticity ratio representing the skin's ability to return to its original position after deformation; higher values indicate greater skin elasticity. MMSC-MoistureMeter SC reading representing stratum corneum hydration; higher values indicate greater skin hydration. SD-standard deviation. Statistical significance was determined using the paired Student's t test.

Instrumental evaluation of skin elasticity using Cutometer (R7)

As shown in Table 2 and Figure 2, skin elasticity improved progressively over the 60-day intervention, as evidenced by a significant increase in Cutometer R7 values (higher R7 values indicate greater biological elasticity of the skin). The mean R7 value increased from 37.41±6.44 at baseline to 38.97±6.55 on day 30, representing a 4.2% improvement (p<0.001), and further increased to 40.74±6.49 on day 60, corresponding to an 8.9% improvement from baseline (p<0.001). The improvement in skin elasticity was statistically significant at both follow-up visits compared with baseline.

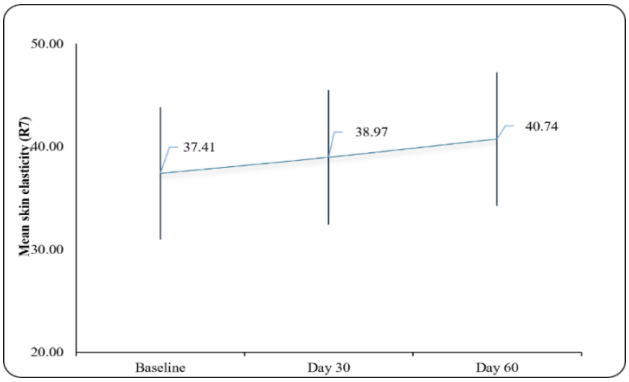


Figure 2: Changes in skin elasticity (Cutometer R7) over the study period.

*Data are presented as mean±SD (n=33). Error bars represent SD.

Instrumental evaluation of skin hydration using MMSC

As shown in Table 2 and Figure 3, skin hydration improved progressively over the 60-day intervention, as evidenced by a significant increase in MMSC readings (higher values indicate greater stratum corneum hydration). The mean MMSC value increased from 24.82±9.81 at baseline to 26.92±9.36 on day 30, representing an 8.4% improvement (p<0.001), and further increased to 29.59±9.41 on day 60, corresponding to a 19.2% improvement from baseline (p<0.001). The improvement in skin hydration was statistically significant at both follow-up visits compared with baseline.

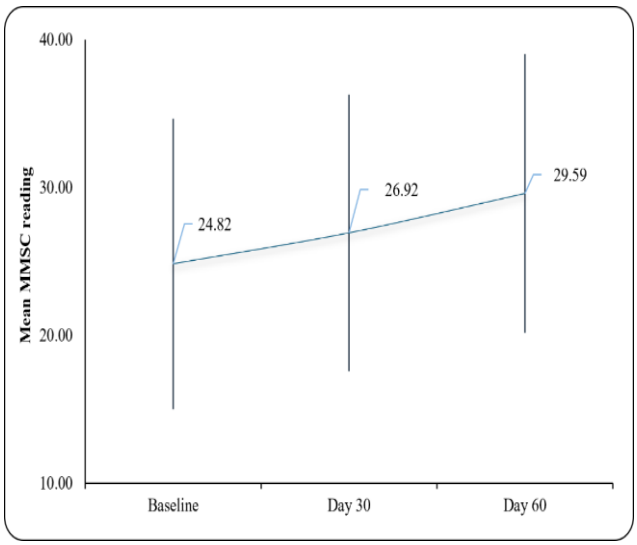


Figure 3: Changes in skin hydration (MMSC) over the study period.

*Data are presented as mean±SD (n=33). Error bars represent SD.

Representative standardized facial photographs

Representative standardized facial photographs are shown in Figure 4. Subtle improvements in overall facial appearance were observed from baseline to day 60 under standardized lighting and positioning conditions, consistent with the objective instrumental findings.

Participant self-assessment of efficacy

Participant-reported improvements were consistent with the instrumental findings. As summarized in Table 3, the proportion of participants reporting positive responses (agree or strongly agree) increased progressively from day 30 to day 60 across all skin efficacy parameters. By day 60, 84.9% of participants agreed that their facial skin had become firmer or tighter, 81.8% reported that their face appeared younger, and 90.9% agreed that their facial skin was well moisturized and hydrated.

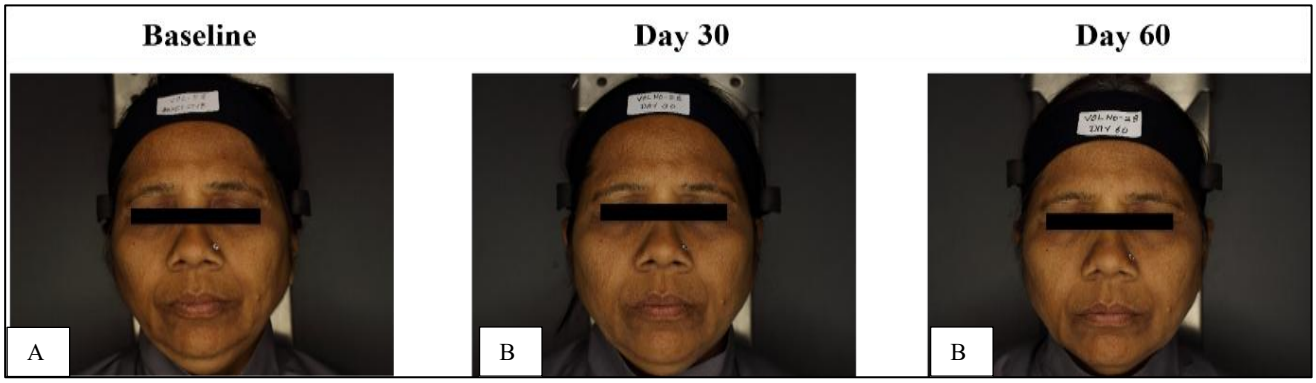


Figure 4 (A-C): Representative standardized frontal facial photographs of a participant at baseline, day 30, and day 60 obtained under standardized lighting and positioning conditions.

Table 3: Proportion of participants reporting positive responses (agree or strongly agree) for skin efficacy parameters.

Parameters	Day 30 (%)	Day 60 (%)
Facial skin has become firmer/ tighter	48.5	84.9
Face appears younger	39.4	81.8
Facial skin is well moisturized and hydrated	66.7	90.9

Responses were assessed using a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree). Values represent participants selecting top 2 categories (agree/ strongly agree).

Participant-reported ancillary wellness outcomes

Participant-reported ancillary wellness outcomes are shown in Table 4. By day 60, all participants reported improvements in joint health and energy levels. Improvements were also reported for sleep quality, reduction in fatigue, feeling more relaxed, and reduction in muscle soreness. These analyses were based only on participants who reported respective baseline complaints and should therefore be interpreted as exploratory findings.

Product tolerability and safety

The investigational product "RESET by IQ HEALTH ™" was generally well tolerated throughout the study. No serious adverse events were reported, and no participant discontinued the study because of treatment-related adverse events. Tolerability outcomes are summarized in Table 5. Most participants reported no gastrointestinal symptoms at either follow-up visit. Mild gastrointestinal complaints were infrequent and included bloating, burping, and diarrhea. Five participants reported gastrointestinal intolerance at day 30, whereas only two participants reported intolerance at day 60, indicating an overall reduction in reported symptoms over the study period. Blood tests performed on day 60 showed no clinically significant changes from baseline, suggesting that the product was well tolerated and did not affect systemic health.

Table 4: Participant-reported ancillary wellness outcomes.

Parameters	N	Day 30 (%)	Day 60 (%)
Improvement in joint health	33	87.9	100.0
Improvement in sleep quality	18	83.3	94.4
Reduction in fatigue	22	81.8	100.0
Feeling more relaxed	30	86.7	96.7
Reduction in muscle soreness	6	83.3	100.0
Improvement in energy levels	33	90.9	100.0

*N represents number of participants who reported respective complaint at baseline

Table 5: Gastrointestinal symptoms reported during the study.

Symptom	Day 30, N	Day 30 (%)	Day 60, N	Day 60 (%)
Heartburn	0	0	0	0
Acid reflux	0	0	0	0
Nausea	0	0	0	0
Bloating	1	3.0	1	3.0
Burping	1	3.0	0	0
Constipation	0	0	0	0
Diarrhea	3	9.1	1	3.0

*Values are presented as number (n) and percentage (%) of participants reporting each symptom at the respective study visit.

DISCUSSION

In this prospective, open-label, single-arm pilot study, daily supplementation with the multi-ingredient

nutraceutical RESET by IQ HEALTH™ for 60 days was associated with progressive improvements in facial skin firmness, elasticity and hydration. Significant changes were observed by day 30 and were further improved by Day 60, with changes from baseline of 38.9% for firmness, 8.9% for elasticity and 19.2% for hydration. These objective findings were accompanied by increasing proportions of participants reporting that their facial skin appeared firmer, younger and better moisturized. Together, the instrumental and participant-reported findings provide preliminary evidence that the formulation may beneficially influence multiple interrelated parameters of facial skin ageing.

The concurrent improvement in firmness, elasticity and hydration is biologically coherent with the interconnected roles of extracellular matrix (ECM) integrity, connective-tissue architecture and skin hydration.[2,3,6,8] Dermal mechanical properties depend on collagen and elastin together with the hydrated glycosaminoglycan-rich matrix that contributes to tissue turgor and viscoelastic behaviour.[2,3,6] RESET by IQ HEALTH™ contains several components relevant to these processes, including hyaluronic acid, glucosamine hydrochloride, glycine, L-proline, L-lysine and *Centella asiatica*. Hyaluronic acid contributes to water binding, glucosamine participates in glycosaminoglycan biology, while Glycine serves as an essential substrate for collagen biosynthesis, whereas L-proline and L-lysine undergo hydroxylation important for collagen stability and maturation.[8-12] *Centella asiatica* has also been investigated for its effects on collagen production and tissue repair.[21] These mechanisms provide a plausible formulation-level rationale for the concurrent improvement in hydration and mechanical skin parameters. However, because the complete formulation was evaluated as a single intervention, the present study cannot attribute the observed effects to any individual ingredient or ingredient interaction.

The findings are also consistent with clinical evidence on multi-ingredient oral skin-nutrition products, which is particularly relevant to the present formulation. The Evelle randomized, double-blind, placebo-controlled trial evaluated a combination containing vitamins, carotenoids, selenium, zinc, amino acids, glycosaminoglycans, blueberry extract and Pycnogenol and reported improvements in Cutometer-assessed elasticity and skin roughness.[25] Other controlled studies of oral multi-ingredient formulations have similarly reported improvements in selected measures of skin ageing, including roughness and wrinkles.[26,27] A further multi-ingredient oral intervention containing antioxidant and matrix-supportive components demonstrated improvements in skin hydration and tonicity together with changes in selected serum biomarkers.[28] Similarly, a randomized study of an oral multi-ingredient formulation containing vitamins, zinc and a marine complex reported changes in objective skin parameters following supplementation.[29] Recent clinical evidence with an oral berry-derived intervention has also demonstrated improvements in objective skin-ageing parameters, including firmness and elasticity.[30] In addition, a recent systematic review and meta-analysis of randomized controlled trials found evidence of benefit for selected dietary supplements, particularly collagen, flavanols and polyphenols, while noting insufficient or inconsistent evidence for several other supplement categories.[31] These studies differ from the present intervention in composition, population, duration and design and therefore serve as contextual rather than direct efficacy comparisons.

The antioxidant and cellular-resilience components of RESET by IQ HEALTH™ provide an additional biological rationale. Oxidative stress and inflammation are established contributors to skin ageing and can promote matrix metalloproteinase activity, collagen degradation and deterioration of dermal structure.[5,6] Blueberry-derived anthocyanins have been investigated in relation to antioxidant and skin-health pathways.[13,14] Ergothioneine and selenium contribute to antioxidant and cytoprotective defence, while taurine and L-carnitine have biological roles in cellular stress regulation and mitochondrial metabolism.[15-18] These mechanisms may contribute to the overall formulation effect; however, oxidative-stress, inflammatory and mitochondrial biomarkers were not measured in the present study and therefore remain mechanistic hypotheses rather than demonstrated mediators.

The exploratory self-reported improvements in joint comfort, energy, sleep quality, fatigue, relaxation and muscle soreness provide an additional systemic healthy-ageing perspective. Several formulation components have biological relevance to cellular energy metabolism, mitochondrial function and vascular regulation.[17-20] For example, L-carnitine plays a central role in mitochondrial fatty-acid transport and energy metabolism, taurine has been linked to mitochondrial function and cellular stress regulation, magnesium participates in ATP-dependent enzymatic processes relevant to neuromuscular function, and L-citrulline serves as a precursor of nitric oxide involved in vascular function and tissue perfusion.[17-20] L-tyrosine, included as a catecholamine precursor relevant to cognitive and stress-response pathways, provides an additional mechanistic rationale for considering exploratory wellbeing outcomes; however, cognitive performance, stress biomarkers and neuroendocrine outcomes were not assessed.[24] Collectively, these pathways provide a biologically plausible rationale for the exploratory improvements reported in energy levels, fatigue, relaxation and muscle soreness. A randomized placebo-controlled study of a multi-ingredient oral formulation containing collagen peptides, hyaluronic acid, glucosamine, chondroitin, L-carnitine, vitamins and other bioactive components also reported improvements in skin elasticity together with favourable joint and general wellbeing outcomes, providing clinical precedent for assessing skin and broader wellbeing outcomes within a multi-ingredient nutraceutical framework.[32]

Nevertheless, the wellbeing outcomes in the present study were participant-reported, the number of participants contributing to each analysis differed according to baseline complaints, and validated function-specific instruments were not used. These findings should therefore be interpreted as exploratory observations rather than evidence of systemic efficacy.

The inclusion of *L. acidophilus* is grounded in emerging interest in the gut-skin axis rather than in settled clinical consensus. Current literature describes potential interactions between the gut microbiome, immune regulation, barrier function and skin health, but clinical evidence for oral probiotic effects on visible skin-ageing parameters remains limited and inconsistent. In placebo-controlled trial of a comparable heat-killed *L. acidophilus* strain, primary wrinkle endpoints did not differ from placebo, although a modest, exploratory improvement in an elasticity index was observed.[22,23] As microbiome, inflammatory, or gut-barrier parameters were not assessed in the present study, *L. acidophilus* should be regarded as part of the formulation's mechanistic rationale rather than a component with independently confirmed efficacy for the outcomes measured here.

Overall, the findings support the concept of an inside-out, multi-target nutritional approach to skin ageing, in which interconnected pathways involving extracellular matrix support, hydration, antioxidant defence and cellular resilience may be addressed simultaneously. The concurrent improvements in firmness, elasticity and hydration are consistent with this formulation-level, multi-pathway rationale and support further investigation of oral multi-ingredient approaches for promoting skin health and healthy ageing

Limitations

This study was designed as an exploratory, single-arm pilot evaluation and therefore provides preliminary evidence of the effects associated with the investigational nutraceutical. The absence of a placebo or comparator group limits the ability to distinguish treatment associated changes from potential placebo or other temporal effects. However, the use of standardized environmental conditions and validated objective instruments enables an objective assessment of the main skin outcomes. Also, the relatively small sample size warrants caution in interpreting the magnitude and generalizability of the findings.

The study was conducted at a single centre in relatively healthy Indian adults aged 35-55 years, with outcomes assessed over 60 days. Further randomized, placebo-controlled studies involving larger and more diverse populations and longer follow-up would be valuable to confirm these preliminary findings and further characterize the durability of the observed effects and long-term safety.

CONCLUSION

In this 60-day prospective, open-label, single-arm pilot study, daily oral supplementation with the multi-ingredient nutraceutical RESET by IQ HEALTH™ was associated with significant within-subject improvements in facial skin firmness, elasticity and hydration in adults with visible signs of skin ageing. Product was generally well tolerated, with only mild and infrequent gastrointestinal symptoms reported. Given the exploratory design, small sample size and absence of a placebo/ comparator group, these findings should be interpreted as preliminary and warrant confirmation in adequately powered randomized, placebo-controlled studies.

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