Research Article

ISSN 2639-8494

Clinical Immunology & Research

Effects of BIM Mangosteen Juice on Healthspan

Pichaet Wiriyachitra[1]*, Preeya Leelahagul[1], Ramida Watanapokasin[2], Sirithip Wiriyachitra[1], Jannatthabhorn Janprasert[1] and Sakda Sreesangkom[1]

[1]*Asian Phytoceuticals Public Company Limited, Thailand.*

[2]*Department of Biochemistry, Faculty of Medicine, Srinakharinwirot University, Bangkok, Thailand.*

***Correspondence:**
Wiriyachitra P, Asian Phytoceuticals Public Company Limited, Thailand, Tel: +662 646 4882, E-mail: pw@apco.co.th.

Received: 02 Jan 2026; **Accepted:** 05 Feb 2026; **Published:** 17 Feb 2026

Citation: Wiriyachitra P, Leelahagul P, Watanapokasin R, Wiriyachitra S, Janprasert J, Sreesangkom S. Effects of BIM Mangosteen Juice on Healthspan. Clin Immunol Res. 2026; 10(1): 1-4.

ABSTRACT

Daily consumption of 200 mL of BIM (Balancing Immunity) mangosteen juice (80% w/w) by 14 female participants over a 4-week period resulted in a reduction in pro-inflammatory cytokines, namely tumor necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), and interleukin-17A (IL-17A), along with an increase in the anti-inflammatory cytokine interleukin-10 (IL-10), which is associated with regulatory T cells. In addition, participants exhibited evidence of anti-aging and age-reversal effects, corresponding to an average estimated biological age reversal of approximately 1 year on average, with a maximum of 4 years, as indicated by telomere elongation and enhanced autophagy-related gene expression. These findings support the regimen of combining Mylife® capsules with BIM mangosteen juice. Furthermore, we found conclusive evidence that participants who consumed BIM mangosteen juice alone experienced increased autophagy. This investigation indicates the efficacy of BIM mangosteen juice in balancing immune responses in individuals with excessive elevation of Th17 resulting from Mylife® capsule consumption.

Keywords

Age Reversal, Autophagy, Balancing Immunity, BIM Mangosteen Juice, Cytokines, Interleukin (IL), Mylife®, T cells, Telomere.

Background

Over the past two decades, a mangosteen-fortified extract known as Mylife® has been utilized as an alternative treatment for cancer patients across all disease stages, demonstrating high therapeutic efficacy with additional age-reversal effects with minimal side effects [1-3]. Nevertheless, a subset of patients exhibited inflammatory responses associated with excessive T-cell activation. This mild but undesirable immunological side effect was subsequently mitigated through the concurrent administration of mangosteen juice alongside Mylife® capsules.

The observed attenuation of excessive inflammation was attributed to the immunomodulatory properties of the mangosteen juice, which is produced from mangosteen pulp. Preliminary investigations indicated that this juice exerted a suppressive effect on pro-inflammatory cytokines, particularly IL-17.

In the present study, we aimed to re-evaluate and rigorously establish the efficacy of this Balancing Immunity (BIM) mangosteen juice in modulating pro-inflammatory cytokine levels to within acceptable physiological ranges. Furthermore, we sought to investigate and report the potential autophagic effects of BIM mangosteen juice. In addition, this study aimed to reconfirm, in a larger cohort of users, the capacity of BIM mangosteen juice to suppress key pro-inflammatory cytokines, including TNF-α, IL-6, and IL-17A.

Materials and Methods

Preparation of BIM Mangosteen Juice

Mangosteen pulp was crushed and mixed with water at a ratio of 80:20 (w/w) until a homogeneous solution was obtained. The mixture was then autoclaved for sterilization at 125°C for 30 minutes

Participants

The study included 14 female participants with an age range of 60 to 72 years. All participants were generally healthy, non-drinkers, non-smokers, and had no chronic illnesses requiring regular

medication. Their diet, exercise, and daily routines remained consistent throughout the 4-week study period (Table 1).

Table 1: Initial Body Composition of 14 Female Participants Receiving 200 mL/day of BIM Mangosteen Juice for 4 Weeks.

No	Sex	Age	Height, cm	Weight, kg	BMI, kg/m^2
1	F	60	164	58.4	21.7
2	F	63	154	45.8	19.3
3	F	64	153	44.4	19.0
4	F	65	160	57.1	22.3
5	F	66	157	56.6	23.0
6	F	67	154	47.3	19.9
7	F	67	160	53.2	20.8
8	F	67	147	47.1	21.8
9	F	68	151	44.3	19.4
10	F	69	157	45.5	18.5
11	F	72	154	59.2	25.0
12	F	72	145	45.5	21.6
13	F	72	141	38.8	19.5
14	F	72	157	50.9	20.9

Study Design

The study spanned 4 weeks, with each participant attending two scheduled visits: week 0 (first visit) and week 4 (second visit). Body composition data and blood samples were collected at each visit. Participants were instructed to maintain their usual lifestyle, including their daily dietary intake and exercise habits, throughout the entire 4-week period.

Blood Sample Collection

Blood samples were collected by venipuncture after a 12-hour fasting period to measure various biomarkers analyzed using an automated blood BS-400 chemistry analyzer for fasting plasma glucose, blood urea nitrogen (BUN), creatinine, serum glutamic oxaloacetic transaminase (SGOT) and serum glutamate pyruvate transaminase (SGPT). Serum was obtained from clotted blood to assess IL - 6, IL-9, IL-10, IL-17A, and TNF-α. An aliquot of EDTA blood was used for a complete blood count and to assess T-lymphocyte subpopulations. Another EDTA blood sample was used to isolate peripheral blood mononuclear cells (PBMCs) for measuring absolute telomere length and autophagy gene expression.

Measurement of Body Composition

Body weight, height, body mass index (BMI: kg/m2), body fat (% of body weight), fat mass (kg), fat-free mass (FFM: kg), muscle mass (kg), total body water (%), bone mass (kg), and visceral fat were measured using a Tanita BC-420MA body composition analyzer (Tanita Corporation, Tokyo, Japan) [4].

Measurement of Cytokines

Using the enzyme-linked immunosorbent assay (ELISA) technique, the anti-inflammatory and immunostimulatory properties of the compounds isolated from serum were determined. Serum was separated from whole blood using a gel clot activator tube (MMS Medical and Laboratory Supplies, Philippines) and used to determine the concentrations of IL-6, IL-9, IL-10, IL-17A, and TNF-α using the ELISA MAX™ Deluxe kit (BioLegend, USA). ELISA was performed as recommended by the manufacturer. Human IL-6, IL-9, IL-10, IL-17A, and TNF-α standards were diluted to reach the concentrations of 0–500pg/mL. The absorbance at 450nm and 540nm was measured by using the SpectraMax® iD3 multi-mode microplate readers (Molecular Devices, LLC, USA). The absorbance was compared to the standard curve to determine the concentrations of IL-6, IL-9, IL-10, IL-17A, and TNF-α and reported in pg/mL. [ELISA MAX™ Deluxe Set Human IL-6 (Product cat no. 430504), ELISA MAX™ Deluxe, Set Human IL-9 (Product cat no. 434704), ELISA MAX™ Deluxe Set Human IL10 (Product cat no. 430604), ELISA MAX™ Deluxe Set Human IL-17A (Product cat no. 433914), and ELISA MAX™ Deluxe Set Human TNF-α (Product cat no. 430204) BioLegend, USA].

Measurement of Autophagy Gene Expression

Real-Time PCR (qPCR)

1. **RNA Preparation**

Total RNA was extracted from PBMCs using TRI Reagent® according to the manufacturer's protocol (cat. no. TR 118, Molecular Research Centre Inc.). The RNA concentration and purity were assessed using a NanoDrop spectrophotometer (Thermo Fisher Scientific, USA).

2. **cDNA Synthesis**

One microgram of total RNA was converted into cDNA using the iScript™ Reverse Transcription Supermix for RT-qPCR, following the manufacturer's protocol (cat. no. 1708841, Bio-Rad). The reaction was performed at 46°C for 20 minutes, followed by enzyme inactivation at 95°C for 1 minute.

3. **Real-Time PCR analysis**

Real-time PCR was performed using the KAPA SYBR® FAST qPCR Master Mix (2X) Kit (KAPA Biosystems, South Africa) and the QuantStudio 3 Real-Time PCR System (Thermo Fisher Scientific, USA), following the manufacturer's protocol. The primer sequences for the LAMP1 gene were F: CTCTAATGT CTGCAGCTCAAGG and R: TGTACACAGCGCAGAACAGG. BECN1 gene were F: GCTCCCGAGGGATGG and R: AGTAATGGACCTGTGAGTTC. LC3A gene were F: CATGAGCGAGTTGGTCAAGAT and R: TCGTCTTTCTCCTGCTCGTAG. ATG5 gene were F: TTTGCATCACCTCTGCTTTC and R: TAGGCCAAAGGTTTCAGCTT. P62 gene were F: AGACTACGACTTGTGTAGCGT and R: AAGGTGAAACACGGACACTTC [5].

Measurement of Leukocyte Telomere Length

Peripheral blood mononuclear cells (PBMC) were isolated from whole blood by density gradient centrifugation. Genomic DNA was extracted from 2–5 million PBMCs using the DNeasy kit (Qiagen), and its purity and quantity were checked via UV spectrophotometry. PBMC telomere length was measured by quantitative PCR, comparing the telomere repeat copy number to the single-copy gene 36B4, based on the qPCR method of O'Callaghan and Fenech. Each 10-µL qPCR reaction included 20

ng DNA, PowerUp SYBR Green, and telomere primers, with 40 cycles and a dissociation curve for verification. A standard curve ensured reaction linearity ($R^2 > 0.99$) and allowed conversion to absolute telomere length (aTL) in kb per diploid genome. Triplicate runs were used, with a 1% interassay variation [4].

Statistical Analysis

The statistical analyses were performed using PASW Statistics 18, with a significance level of 5% ($p < 0.05$) for all analyses.

Results

The initial body composition of the 14 participants is shown in Table 1. The sample group consisted of 14 female participants, aged 60–72 years (average age: 67 ± 4 years). Their average BMI was 20.1 ± 1.8 kg/m². All participants were generally healthy, non-drinkers, non-smokers, and had no severe chronic diseases. Their daily living activities (diet, exercise, and routine) remained consistent throughout the 4-week data collection period. During weeks 1–4, 200 mL of BIM mangosteen juice was taken daily before breakfast. All participants experienced no side effects. Food intake and energy expenditure remained consistent throughout the study, as assessed by blood pressure, BMI, percentage of body fat, and blood glucose levels which remained stable within normal ranges during the entire study period (Table 2).

Safety of BIM Mangosteen Juice

Effects of BIM Mangosteen Juice on Liver and Renal Function

Kidney function was assessed by measuring BUN and creatinine levels, while liver function was evaluated using SGOT and SGPT enzyme levels. Throughout the study, the levels of serum BUN, creatinine, SGOT, and SGPT, which indicate liver and kidney function, remained within normal ranges (Table 2).

Effects of BIM Mangosteen Juice on T Cells

Despite variations in cytokine levels, there was no significant change in the number of T cells among participants who consumed 200 mL of BIM mangosteen juice daily for 4 weeks (Tables 3 and 4).

Effects of BIM Mangosteen Juice on Autophagy Induction

In this study, regular consumption of BIM mangosteen juice for 4 weeks was associated with increased expression of autophagy-related genes, indicating activation of autophagy-associated processes. Expression of autophagy markers was observed across the study population, although the specific genes expressed varied among individuals. The proportions of participants exhibiting increased expression of Beclin-1, ATG5, LC3A, LAMP1, and p62 were 7%, 29%, 43%, 21%, and 64%, respectively. These findings indicate that autophagy-related gene expression was detectable in all participants, albeit through different marker profiles and to varying extents (Table 5).

Effects of BIM Mangosteen Juice on Leukocyte Telomere Length

An increase in absolute telomere length of 70 base pairs (bp) is equivalent to a one-year reversal in biological age [3]. As shown in Table 4, the mean ± SD of absolute telomere length of all 14 female participants was 5,560 ± 843 bp at week 0 and increasing to 5,634 ± 867 bp at week 4. The mean absolute telomere length at week 4 increased by 74 bp from week 0, equivalent to age an estimated biological age reversal of 1.0 year. The maximum observed increase in absolute telomere length was 278 bp (Table 6).

Table 2: Blood Pressure, Body Composition, and Blood Chemistry of 14 Female Participants Receiving 200 mL/day of BIM Mangosteen Juice for 4 Weeks.

Parameter	Week	Mean ± SD	Normal Value
Systolic BP, mmHg	0	136 ± 22	
	4	134 ± 18	
Diastolic BP, mmHg	0	77 ± 11	
	4	76 ± 7	
BMI, kg/m²	0	20.9 ± 1.8	
	4	21.0 ± 1.8	
Body fat, % of bw	0	28.7 ± 3.7	
	4	28.8 ± 3.8	
Glucose, mg/dL	0	90 ± 7	
	4	95 ± 10	
Blood urea nitrogen, mg/dL	0	11.5 ± 2.2	7.8–20.3
	4	14.2 ± 3.3	
Creatinine, mg/dL	0	0.70 ± 0.09	Female: 0.65–1.08
	4	0.83 ± 0.07	
SGOT, U/L	0	21 ± 3	Female: 0–31
	4	24 ± 4	
SGPT, U/L	0	22 ± 13	Female: 0–34
	4	24 ± 14	

Table 3: White Blood Cells, Lymphocytes, CD4, and CD8 T-Cell Counts of 14 Female Participants Receiving 200 mL/day of BIM Mangosteen Juice for 4 weeks.

Parameter (Normal Range)	Week	Mean ± SD
White blood cells, cells/μL (4,000–10,000 cells/μL)	0	5,441 ± 1,236
	4	5,568 ± 1,195
Lymphocytes, cells/μL (1,500–4,000 cells/μL)	0	1,822 ± 523
	4	1,772 ± 520
CD4, % (24.1–50.7%)	0	40.4 ± 4.4
	4	41.9 ± 4.9 [a]
increased 1.5% or 3.7% from week 0		
CD4, cells/μL (470–1,404 cells/μL)	0	746 ± 260
	4	743 ± 242
CD8, % (17.1–44.6%)	0	22.6 ± 8.2
	4	22.3 ± 7.4
CD8, cells/μL (360–1,250 cells/μL)	0	397 ± 132
	4	391 ± 144
CD4: CD8, (0.65–2.49)	0	2.00 ± 0.70
	4	2.10 ± 0.78

Significant difference from week 0: [a]$p < 0.05$

Table 4: Interleukin-6, Interleukin-9, Interleukin-10, Interleukin-17A, and TNF-α Levels in 14 Female Participants Receiving 200 mL/day of BIM Mangosteen Juice for 4 Weeks.

Parameter	Week	Mean ± SD
Interleukin-6, pg/mL	0	7.61 ± 5.28
	4	6.19 ± 3.63
Interleukin-9, pg/mL	0	0.80 ± 0.59
	4	0.69 ± 0.50
Interleukin-10, pg/mL	0	4.27 ± 1.54
	4	4.82 ± 7.76
Interleukin-17A, pg/mL	0	10.80 ± 5.21
	4	9.45 ± 4.11
TNF-α, pg/mL	0	2.41 ± 1.33
	4	2.29 ± 1.09

Table 5: Expression of Autophagy-Related Genes in 14 Female Participants Receiving 200 mL/day of BIM Mangosteen Juice for 4 Weeks.

Autophagy Marker Gene	Percentage
Beclin-1	7.00%
ATG5	29.00%
LC3A	43.00%
LAMP1	21.00%
p62	64.00%

Table 6: Leukocyte Telomere Length of 14 Female Participants Receiving 200 mL/day of BIM Mangosteen Juice for 4 Weeks.

Parameter	Week	Mean ± SD
Telomere, base pairs	0	5,560 ± 843
	4	5,634 ± 867 increased by 74 base pairs from week 0 maximum increase of 278 base pairs
Telomere, percentile	0	42.1 ± 13.9
	4	42.4 ± 14.6

Discussion

The observed decrease in pro-inflammatory cytokines, namely TNF-α, IL-6, and IL-17A, together with an increase in the anti-inflammatory cytokine IL-10 following daily consumption of 200 mL of BIM mangosteen juice for 4 weeks, indicates that BIM mangosteen juice can be safely consumed and provide health benefits by helping to balance immune responses in individuals with autoimmune conditions.

The observed upregulation of autophagy-related genes underscores the tightly regulated and context-dependent nature of this cellular recycling process. Despite notable inter-individual variability, the overall gene expression profile indicates that bioactive constituents in BIM mangosteen juice stimulate autophagy-mediated cellular maintenance mechanisms relevant to cellular homeostasis and anti-aging.

Notably, daily consumption of 200 mL of BIM mangosteen juice alone for 4 weeks resulted in anti-aging and age-reversal effects. This was evidenced by an average telomere elongation of 74 bp, with a maximum increase of 278 bp, corresponding to an estimated biological age reversal of approximately 1 year on average, and up to 4 years at maximum. The study therefore demonstrates that BIM mangosteen juice has multiple beneficial effects on healthspan.

References

1. Wiriyachitra P, Leelahagul P, Wiriyachitra S, et al. Cancer Patient Life Quality Improvement by T-Cell Stimulation with Five Edible Plants. Clin Immunol Res. 2024; 8: 1-3.
2. Wiriyachitra P, Leelahagul P, Wiriyachitra S, et al. Effective Cancer Treatment and Prevention with Plant-Based Immunotherapy. Clin Immunol Res. 2024; 8: 1-4.
3. Wiriyachitra P, Leelahagul P, Wiriyachitra S, et al. Age Reversal by Telomere Elongation Without Cancer Risk. Clin Immunol Res. 2024; 8: 1-4.
4. Praengam K, Tuntipopipat S, Muangnoi C, et al. Efficacy of a dietary supplement derived from five edible plants on telomere length in Thai adults: A randomized, double-blind, placebo-controlled trial. Food Sci Nutr. 2024; 12: 1592-1604.
5. Lee WC, Tain YL, Wu KLH, et al. Maternal Fructose Exposure Programs Metabolic Syndrome Associated Bladder Over activity in Young Adult Offspring. Sci Rep. 2016; 6: 34669.