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E. EXCEL'S WORLD



July – September 2023

E. Excel Allows Work and Play to be Perfectly Combined

Diamond Master Liao Chien-Yi



Liao Chien-Yi

From: Taiwan

Strengths and Hobbies:

Cooking, baking, reading, yoga

Dream: To travel the world with E. Excel

Traveled with E. Excel to:

Royal Caribbean Cruise, Vietnam, India, Sanya, Spain, Penang, Phuket

When you first meet Liao Chien-Yi, it is easy to be attracted to her beauty and cheerful personality. This newly promoted Diamond Master bravely tries new things, advocates for freedom, and loves traveling. She attempted to look for her direction in life through her studies and major in school, but ended up finding the answer in E. Excel.

Before starting her E. Excel career, Chien-Yi tried many cross-industry jobs. She used the transition time between jobs to travel the world. She spent nearly a year in Australia, backpacked through Thailand and Cambodia, enjoyed a three-month trip to India and Nepal, and even went to Mexico to teach locals how to speak Mandarin. What rich and colorful life experiences! She eventually returned to Taiwan and found a career in which she could shine and flourish—the E. Excel career! Chien-Yi puts her life philosophy ‘Enrich your life and make it more interesting’ into action.

Thanks to her mom, Chien-Yi got to know of E. Excel when she was just 10 years old. E. Excel products have accompanied Chien-Yi throughout her growing years because all her family members are loyal consumers. “My mom took up the E. Excel career later on. When I entered society and was struggling to find my life goals, my mom never asked me outright to take up the E. Excel career. I think she was waiting for me to find my life goals on my own.”

Chien-Yi majored in Early Childhood and Family Education but did not pursue a career in education. “The traditional school education system didn’t really appeal to me! The thought of spending my whole life in the same school, living the same monotonous life year after year, is not what I want in life. I seek a lifestyle that affords me the flexibility to arrange my own schedule and enjoy personal moments such as reading and cooking a good meal. But the conventional eight-hour workday, prevalent in many industries, drains too much of my mental energy, leaving me little room for planning my own life outside of work.”

When asked why she chose the E. Excel career, Chien-Yi replied, “The E. Excel career is great! It allows me to decide where and when I work. I’ve flexibility in arranging my schedule, I earn an income that reflects my effort, and I work with like-minded friends. More importantly, it doesn’t hinder my dream of traveling the world. In fact, I’ve been able to travel while managing my E. Excel career—I’ve traveled to Mexico, Peru, and Bolivia in Latin America, and went on road trips in Canada and the United States to experience camping. This is in addition to the many countries I’ve visited with E. Excel. Thanks to E. Excel, I’ve found a lifestyle that suits me perfectly. After searching aimlessly for the right career, I found it right under my nose. The more I explore the world, the more confident I am in my choice.” At the age of 28, Chien-Yi confirmed that the E. Excel career would be her lifelong career.



Chien-Yi is a young generation representative of E. Excel. She has been managing the E. Excel career for only a few years but has already attained the highest rank. What does this mean to her? She said earnestly, "Becoming a Diamond Master is just the beginning, not the end. It means that I can influence more people. While it may be an important milestone for many E. Excellers, for me, my career is only just starting. With this new role, I've a greater responsibility and mission to lead more people forward, and I hope more people can benefit from Nutritional Immunology."

When asked about the secret to managing the E. Excel career, Chien-Yi shared with ease, "The answer is very simple—lead by example and live a better, more confident, and more beautiful life. By taking care of ourselves, we become the best spokespeople for E. Excel, and naturally attract others to us. Through social media, our peers and friends can witness our growth and transformation, inspiring admiration and curiosity about E. Excel."

The saying 'One can go fast alone, but a group of people can go far' is Chien-Yi's understanding of the E. Excel career. She explained, "The power of teamwork is much stronger than individual effort. In E. Excel, we benefit from the guidance of experienced mentors and the support and collaboration of fellow E. Excellers. By sharing our experiences and knowledge, we ensure that the E. Excel career endures across generations."

"After three years of the COVID-19 pandemic, people have become more familiar with the use of online tools. The Company provides online training courses for E. Excellers, while I use social media to share my experiences. My team and I leverage LINE group chat to enhance our cohesion and collaboration. Thanks to the Internet, we can transcend the limitations of time and space and engage in online meetings to learn, discuss, and develop our careers. Our generation is fortunate to have digital technology to help us manage our E. Excel careers more efficiently."

Chien-Yi's personal philosophy is to 'Live a splendid life and be the best version of yourself because you only live once.' Choosing the E. Excel career has allowed her to achieve this ideal. "You may think I'm working, but I'm actually having fun; you may think I'm having fun, but I'm actually working!" Chien-Yi feels fortunate to have found in E. Excel a lifestyle that brings her joy and fulfillment, and she hopes to share this passion with more people.

Life Motto—"The greatest achievement in life is to blur the boundary between work and play."

Make the Right Choice and Give It Your All

Diamond Masters Lin Shih-Ya and Lee Mei-Lih



**Lin Shih-Ya and
Lee Mei-Lih**

From: Taiwan

Strengths and Hobbies:

Making friends, cooking, singing, reading

Dream: Traveling around the world, helping friends to gain health and wealth

Traveled with E. Excel to:

Japan, South Korea, Hong Kong, Beijing, Sanya, Macau, Zhuhai, Australia, the United Kingdom, Austria, the Czech Republic, Vietnam, Spain, Singapore, Penang, Phuket, Royal Caribbean Cruise

Lin Shih-Ya is in public works engineering. Beneath his tall and rugged exterior, he is deeply thoughtful and deliberates about everything. In contrast, Lee Mei-Lih, who has been a school volunteer for many years, has a selfless and heroic personality. With their complementary personalities and mutual understanding, the newly promoted Diamond Masters Shih-Ya and Mei-Lih work together, step by step, to achieve their dreams.

Recounting how E. Excel entered her life, Mei-Lih laughed and said that she initially refused to accept E. Excel because of a misunderstanding about nutrition. Mei-Lih recalled, "Before encountering E. Excel, I never took my health seriously. I relied heavily on painkillers during my menstrual periods. After eight years of marriage, I still couldn't get pregnant and became a subject of gossip among my neighbors. At that time, my aunt Hsiu-Chen recommended E. Excel to me, but I thought I was young and strong, not an elderly person who needed additional nutrition. It wasn't until a routine health check before applying for insurance that I unexpectedly discovered gynecological problems and was denied coverage. I was shocked to realize that being young doesn't necessarily mean being perfectly healthy! With the full support of my husband Shih-Ya, I finally began to learn about E. Excel's Nutritional Immunology."

Mei-Lih continued to share, "Shih-Ya's belief was that if it's something we consume, it's worth taking the time to understand it deeply. E. Excel not only shares about its products but also actively shares health knowledge, which is pretty precious. With this as a starting point, I entered the world of E. Excel and learned about Nutritional Immunology, which was like finding a treasure. It changed my perspective on nutrition and diet, and there were many surprises and rewards along the way. The most unforgettable and touching moment was when I heard the heartbeat of my baby for the first time through an ultrasound! Yes! Not only did I finally become pregnant, but I also had three children in a row! I knew that I had finally embarked on a path towards a healthy and happy life!"

Today, Mei-Lih is effusive about her domestic bliss. She had a long-distance relationship with Shih-Ya, and bravely moved from Taipei to Meishan Township in Chiayi County after marriage, transitioning from a city worker to a homemaker in a rural area. With her past work experience, she easily found a job as a supermarket manager and was later recommended to become a local councilor's assistant. Despite having such an enviable position in the countryside, Mei-Lih's dreams were far greater because she believed how far one could go depended on how high one set one's dreams.



Mei-Lih shared with ease and assurance, “After becoming a mother, balancing work and child-rearing became my biggest challenge. I hoped to be able to accompany my children as they grow up and be a mother who is always there for them. However, being present doesn’t mean sacrificing because children don’t need parents who sacrifice themselves for them. Therefore, after much deliberation, I changed my career path and chose the E. Excel career. This is a career that gives me the flexibility to arrange my schedule and the freedom to showcase my abilities, and enables me to achieve financial independence.”

Mei-Lih said confidently, “This career has allowed me to volunteer at my children’s school, and I’ve done so for 12 years. I firmly believe that education is only achievable through love and leading by example. I’m thrilled that my children can learn and grow with me, developing a proactively caring character.

“Also, the E. Excel career is worth putting in our full effort, because the more effort we put in, the more we get in return. We didn’t have a honeymoon after getting married, but after winning E. Excel incentive trip challenges time and time again, we’ve visited over 12 countries and traveled abroad almost 30 times. These beautiful experiences are proof and rewards of the changes we’ve made in our lives.”

Shih-Ya also responded, “The best part of our journey with E. Excel is that we don’t actually need to invest a lot of money; we need to invest the most in learning time. Mei-Lih has attended every lecture given by Dr. Jau-Fei Chen in Taiwan for the past 20 years. Upon reflection, however, Dr. Jau-Fei Chen has managed to always stand at the forefront, personally giving lectures on Nutritional Immunology around the world for the past 36 years since founding E. Excel. By working with such a great founder who is dedicated and hard-working, we’re the ones who have gained the most!”

When asked about how to overcome difficulties, Mei-Lih said frankly, “There’s an old Taiwanese Hokkien saying that goes ‘Teach life, teach death, no one teaches how to do business!’ But in E. Excel, it’s different. E. Excellers choose cooperation over competition, offer each other advice, and work together to solve any problems they encounter. On this journey, one person alone may advance faster, but a group of people can go further. I find it incredibly fulfilling and satisfying to have a group of supportive E. Excellers who know each other well to accompany me on this adventure!”

Shih-Ya and Mei-Lih took their 16-year-old son on this year’s Phuket cruise trip, giving him a new perspective of the world while sailing on the world-class *Spectrum of the Seas*. For them, cultivating their children’s worldview and broadening their horizons from a young age is invaluable! Mei-Lih also joked, “I participated in an E. Excel incentive trip to Australia when I was 16 weeks pregnant with my son. I gained 5 kilograms in just a few days. This year, I brought my son along, so he could personally experience how well-fed he was in my womb during my trip with E. Excel!”

Looking back on their journey, Shih-Ya and Mei-Lih thank Dr. Jau-Fei Chen, their teammates, and themselves for making the right choice! “At E. Excel, all of our efforts haven’t been in vain, and we’re very thankful for the positive impact it has had on our lives.”

Life Motto—“The ability to think will lead to a path of success. The ability to act is the key to winning.”

Soar High in E. Excel

Diamond Master Kao Pang-Hsiang



Kao Pang-Hsiang

From: Taiwan

Strengths and Hobbies: Sports training

Dream: Encourage myself to approach each day with seriousness, dedication, and joy

Traveled with E. Excel to:

Egypt, France, Nagoya, Canada, South Korea, India, Royal Caribbean Cruise, Penang, Phuket

With a sunny character and handsome appearance, Kao Pang-Hsiang stands out among a group of people. Pang-Hsiang also insists on being true to himself. Sharing about his life philosophy, he said, "Regardless of any challenges and difficulties, believe in your choices and bravely pursue your dreams. It is only by staying true to yourself that you can achieve success in life." He always follows his own pace when managing his E. Excel career, steadily spreading his wings and soaring high.

E. Excel has been an inseparable part of Pang-Hsiang's life since childhood because of his mother Lai Li-Man, who is also a Diamond Master. However, he did not join E. Excel immediately upon entering the workforce. In his mother's eyes, he is a child with his own ideas. "Following the path laid out by my parents is definitely not my first choice," Pang-Hsiang jokingly said.

Pang-Hsiang majored in Business Administration and attained three master's degrees locally and abroad. He landed his first job at a well-regarded foreign company, with high hopes of applying his knowledge and skills to make a difference. "Back then, I thought that as long as I devoted myself and worked hard, the boss would recognize my efforts and appreciate me. Therefore, I put in extra effort, working from day to night, and I even worked overtime on public holidays. However, despite my hard work, I found myself restricted by a rigid promotion system and limited by stagnant job content," he said. He realized that it would be difficult to realize his ideals and aspirations in an institutionalized work environment where a balance between effort and reward could not be achieved.

"I witnessed how my mother became the master of her own life through E. Excel. Even after working for over 20 years, she is still full of vitality. On the other hand, as I continued to apply my knowledge in the workplace, my ambitions were gradually depleting," Pang-Hsiang observed. He realized that combining his interests with his work was the key to a long-lasting career. "As someone who loves fitness and outdoor activities, I found that E. Excel's focus on health, immunity, nutrition, and other related areas aligned perfectly with my interests. Delving into these areas sparked even more passion and motivation within me." While many people work just to make ends meet, Pang-Hsiang found his own path within E. Excel, gaining much-needed satisfaction and joy from it.

"At E. Excel, I've flexibility in balancing work and life. When I enter work mode, I can fully focus on my tasks. When I want to relax and take a vacation, I can set aside work completely and activate vacation mode. Unlike in traditional industries, I've the freedom in E. Excel to control my own time; I'm not bound by fixed working hours. Moreover, I've the opportunity to meet a diverse range of people, expand my social circle, connect with people from different generations, and interact with individuals from various professional fields. Every day, I enrich my perspective and continue to learn and grow."



Having studied in the United States and Spain, Pang-Hsiang deeply appreciates the open-mindedness and diversity of cultures found in Western countries. "In my classes, my classmates came from different countries. Whether it was in the classroom or during group presentations, they actively sought opportunities to express themselves, which was quite different from Asian students who may be less adept at self-expression. During my internships, I also benefited greatly from open discussions with supervisors, regardless of hierarchy.

"I try to be open when leading my team. I often encourage my teammates to bravely express their ideas. With open communication, teammates can brainstorm, share insights, and learn from each other to enhance problem-solving abilities. This enables them to unleash their full potential."

Pang-Hsiang is Dale Carnegie certified—he is proficient in leadership and communication skills. He now introduces the Dale Carnegie training to his E. Excel team, planning interactive and engaging courses and educational training to help teammates enhance their professional knowledge and familiarize themselves with the application of digital marketing. "I assist teammates in building their own fan base on social media, attracting subscribers through interesting content sharing, and I utilize digital tools to organize the team. I also integrate online and offline activities to diversify our events. I regularly conduct professional courses on Nutritional Immunology, allowing teammates to take turns as lecturers, hosts, and event organizers to cultivate talents within the team."

In managing the E. Excel career, Pang-Hsiang believes in "keeping good intentions and doing one's best." He explained, "Sharing Nutritional Immunology knowledge is rooted in the intention of doing good. Whenever I see the positive changes in my teammates—some moving closer toward their goals and dreams, others attaining a healthier body and mind, and some developing a more positive and proactive mindset—I'm reaffirmed that I'm doing the right thing."

Although he has attained the highest rank of Diamond Master, Pang-Hsiang humbly believes that he is still far from what is considered successful. "I'm still actively learning and striving to continuously contribute to the value of the E. Excel career and helping those in need and those who are passionate about the E. Excel career," he said. Pang-Hsiang once mentioned that success comes when you do what you love, and he is on that path. His greatest aspiration is to help his team constantly unleash its creativity and potential, generating a never-ending wellspring of vitality. "Success comes from bringing Nutritional Immunology to more people. Success is helping more teammates better their health and live the lives they desire. Success is giving it your all, giving it your best shot, and one day, when you look back on your life, you're able to say with pride, 'With E. Excel, I've no regrets!'"

Life Motto—"It is not the destination. It is the journey."

The Need for Variety



Our Body Is One

Think of our body's health as a whole and not as divided, isolated parts. This is because all of our organs are connected and work together to maintain a state of balance in the body.

When one organ is affected, everything else is affected too. Let us take a headache for example. The problem might not lie in the head but in the liver. If the liver is not working properly, it cannot detoxify the body efficiently. This can result in the buildup of harmful substances like ammonia in the blood, which can cause headaches.

Our Body Must Be Nourished as a Whole

Because the organs in our body are interdependent, instead of focusing on just one body part to nourish, it is best to nourish our body as a whole.

Our body requires a combination of nutrients, like the various components that make up a concrete pillar, to better withstand the stresses of daily life.

A Variety of Plant Foods Is Better Than Isolated Nutrients

When choosing what to eat, many people choose based on the taste rather than the health benefits. And when they see a cold virus running rampant in their school or office, they quickly pop vitamin C pills daily for "protection" and convenience. But if vitamin C alone could prevent colds, no one would catch a cold since it is added to many things, from cereal, juices to candies.

Additionally, some people believe consuming isolated nutrients in pill form is better because they are purer or more concentrated, when that is not the case. Consuming these can result in overconsumption, which may have adverse effects on health.

Eating a variety of plant foods is better than consuming isolated nutrients in pill form because plant food provides a complex mixture of nutrients, including fiber and other beneficial compounds, that work together to support the body's functions. Isolated nutrients may lack these additional compounds, which can affect their absorption and efficacy in the body.

Plant foods offer a more enjoyable and sustainable way to obtain necessary nutrients, as opposed to relying solely on supplements.



Our Diet Influences Our Immune System

What we eat affects how strong our immune system is, how well we can prevent diseases, and how quickly we can recover from sickness. However, we cannot make the mistake of viewing specific foods as only good for specific illnesses. There may be research papers that show broccoli is good for cancer, while others show it is good for the heart. But it does not mean broccoli is only good for certain ailments; researchers just have not explored its connection with other diseases.



On the other hand, if we have cancer, merely eating broccoli will not cure it. The important thing is to eat the full color spectrum of vegetables and fruits. No matter what illness we have, ultimately what will nurse us back to health is our immune system. We need to support our immune system with a variety of food nutrients so we can recover to the best of our ability. It is important to ensure it is a “food plant” and not a “medicinal plant.” We can eat a food plant daily and in bigger quantities without side effects, whereas doing so with a medicinal plant may have severe side effects.

Our Body Knows What It Is Doing

Our body is intelligent, but many people think they have to nudge the body along a path they think is better. For example, they may eat collagen believing it will give them beautiful skin. Unfortunately, it does not work that way. The body will take that collagen, break it down, and use it for other more pressing matters, such as restoring damage in organs, than vanity.







Instead of eating a ton of collagen, eating a varied diet is a better way to achieve beautiful skin as it can provide the necessary nutrients to support non-essential processes.

Consuming a variety of plant foods can protect against disease and strengthen the immune system, which works like a security system and clean-up crew for our body. By defending against invaders, clearing away dead cells and debris, and getting rid of malfunctioning cells, the immune system keeps our body healthy. We need to be more informed about the food we are eating and pick foods with purpose. By eating a variety of plant foods with plenty of nutrients, such as antioxidants and polysaccharides, we provide our immune system with the nourishment it needs to function at its best.

Focusing on foods with valuable nutrients, such as anthocyanin-rich foods, can be particularly beneficial. An easy way to do this is to eat a rainbow! The different colors in food give a hint as to what sort of nutrients and antioxidants it contains, so eat plenty of different colors. For example, black goji berries and blueberries have a rich deep hue, which indicates a high anthocyanin content. Bright green vegetables, such as broccoli and spinach, are high in plant nutrients and fiber. Mushrooms, though less bright, are still a different color! They contain plenty of polysaccharides. Roses can also be eaten for their unique health benefits.



It is worth noting that a well-rounded diet should not rely solely on one type of nutrient, and it is better to get nutrients from natural food sources instead of relying on man-made pills.

Food Color	Phytonutrients	Benefits	Foods
Red	Anthocyanins Astaxanthin Carotenoids Ellagic acid Ellagitannins Fisetin Flavones Flavonols Flavan-3-ols Flavanones Luteolin Lycopene Proanthocyanidins Quercetin	Antibacterial Anticancer Anti-inflammatory Blood vessel health Brain health Cell protection Heart health Prostate health	Apples Cherries Goji berries Grapes Strawberries Tomato 
Orange	Alpha-carotene Beta-carotene Beta-cryptoxanthin Bioflavonoids Carotenoids Curcuminoids Naringenin	Anti-inflammatory Blood vessel health Brain health Cell protection Heart health Reproductive health	Carrots Oranges Persimmons Pumpkin 
Yellow	Lutein Rutin Zeaxanthin	Anti-inflammatory Cell protection Digestive health Eye health Heart health Immune health	Asian pears Banana Corn Ginger root Pineapple 
Green	Catechins Chlorogenic acid Chlorophyll Epigallocatechin gallate Folates Glucosinolates Hydroxytyrosol Indole-3-carbinol Isoflavones Isothiocyanate Oleocanthal Oleuropein Phenolic diterpenes Phytosterols Phenols Phenethyl isothiocyanate Sulforaphane Tannins Tyrosol	Anticancer Anti-inflammatory Blood vessel health Bone health Brain health Cell protection Heart health Hormone health Metabolic health	Arugula Asparagus Broccoli Brussels sprouts Edamame/Soybeans Green tea Spinach 
Blue/Purple/Black	Anthocyanins Hydroxystilbenes Procyanidins Pterostilbene Resveratrol	Anti-inflammatory Blood vessel health Bone health Brain health Cell protection Digestive health Heart health Liver health	Black goji berries Blueberries Eggplant Grapes 
White/Brown	Allicin Allyl sulfides Cellulose Lignans Lignins Sesamin Sesamol Tannins Terpenoids Theobromine	Anticancer Anti-inflammatory Blood vessel health Bone health Brain health Cell protection Digestive health Heart health Immune health Metabolic health	Cauliflower Coffee Ginger Legumes Mushrooms Nuts 

Source: The Institute for Functional Medicine. (2021). *Phytonutrient Spectrum Comprehensive Guide*.

A varied diet is crucial to support the body's numerous processes and organs. Each type of food provides different nutrients, such as vitamins, minerals, and macronutrients like carbohydrates, proteins, and fats, that are necessary for the proper functioning of the body. A diet lacking in variety can result in nutrient deficiencies, which can lead to a range of health problems, such as fatigue, a weakened immune system, and poor organ function. In contrast, a varied diet can help ensure the body has all the necessary nutrients to support its many organs and processes, such as digestion, circulation, metabolism, and immune response. Therefore, incorporating a variety of fruits and vegetables into our diet is essential for maintaining optimal health and well-being.

Nature has had millions of years to perfect its craft, and what nature produces is always better than what mankind can do. When it comes to our diet, we want variety. Instead of focusing on what sort of benefits a particular nutrient can bring, it is better to consume wholesome plant foods rich in a variety of nutrients that bring all sorts of benefits, including some hidden benefits that scientists have not gotten around to discovering yet.



The Lifelong Learning article is contributed by Dr. EE Zhang, MBChB.

Teamwork



There is a saying that no man is an island. No matter how talented or self-sufficient we are, we are limited in how much we can achieve alone.

Just ask Michael Jordan—a legendary basketball player and a singular talent considered the greatest of all time, who said this about his astounding success, “Talent wins games, but teamwork and intelligence win championships.” As a supreme talent who led his team to many championship victories, Jordan knew what he was talking about.

Groups of people united in vision and effort can consistently and routinely accomplish what individuals working alone cannot. And in the highly competitive business world, any business’s survival and success depends on the strength and unity of its teams.

At E. Excel, we believe in the power of the team. We have seen time and time again that strong teams produce superior work and provide the best work environment for their members. We have learned that teams do not grow on trees—they must be built with intent and purpose. While each team is as unique as the people that make it up, we have found some key strategies to help any team to grow and flourish.

We Are Greater Together

Teams are more resilient and reliable than individuals. Picture a strong rope—the kind that people have used for thousands of years to work the land, draw water, hold up bridges, and construct magnificent castles and vehicles. Upon closer look, the mighty rope is simply the strength of many small fibers woven together by unity of purpose and vision. Each strand is weak—it is easily frayed and broken. Weave these fragile strands together, and they become a rope that is strong enough to lift mountains.



Individually, we are weak, but with a team, we are powerful. For example, I might make mistakes and miss important details, but my team has my back. They can catch my mistakes, encourage me when I feel down, and remind me when I forget. When I have my team covering my weaknesses, I can go longer, work harder, and do better than I can ever do alone.

Teams make better use of our individual strengths for enhanced productivity and efficiency. The eye can see, the ear can hear, and the mouth can speak. The human body needs all three to do their part in order to hold a conversation with someone. In a team, our unique skills, perspectives, and experiences combine like parts of a human body working together to benefit the whole. A confident, bold team member can push the team to take worthwhile risks, while a cautious, detail-oriented member can calm down the team so it does not rush into decisions. A highly organized member will stabilize the team, while those who think outside the box will keep the team creative and agile. A good team combines disparate abilities and traits into a superior whole. But there is more to teams than just increasing productivity—it has a more supportive work environment. Work can get tough sometimes, and knowing we are not alone is a good feeling. It is meaningful to have comrades who will share in the bad times and celebrate in the good times.



For example, facing rejection is one of the toughest challenges for E. Excellers. The first few rejections can be particularly difficult for a new E. Exceller. Finding someone who really understands what we are going through can be even harder. But our team understands. Those who joined earlier than us have gone through similar rejections and have experienced the same negative emotions as we have; they know our problems. Our teammates also have valuable experiences to share with us as well as consolation, encouragement, and personal wisdom. Our team is where we can get the support we need from the people who can give it. Our team covers our weaknesses, amplifies our strengths, and emotionally supports us to achieve the excellence that defines E. Excel as a company.

Bonding with Our Team

As wonderful as good teams are, they only happen with effort, purpose, and intentionality. Leaders must take charge and shoulder the responsibility of building their teams. More than that, leaders need to commit to seeking out and nurturing their teams. At E. Excel, we are strong proponents of team-building activities.





Here are a few tried-and-true examples of team-building activities: holding weekly study groups, whether in-person or virtually, where team members can read and discuss something specific about health; conducting Q&A sessions to discuss new products, protocols, or for newer members to ask questions about the business; and organizing more casual activities, such as dinner get-togethers or team picnics, which are great ways to build the team without overworking the team members.

Planning a hotpot or a potluck with our team can reveal hidden talents—some may show excellent planning skills, others will show

great patience and service, and some will show generosity by volunteering food and equipment for the gathering. It may also reveal points of weakness to improve upon, such as when half of the team shows up late, the promised drinks never show up, and who eats all the best pieces of meat. These discoveries open doors to practice working with and bonding with our team members. If we can learn to work with our team to throw a simple potluck, we can also work with our team to successfully tackle business challenges.

Incentive Trip

Then there is the crown jewel of team-building activities: the incentive trip. There is something special about stepping away from the daily work environment to engage in activities that foster trust, cooperation, and understanding among team members in a new and exciting place. Away from all that is familiar, we deepen our bonds with our team as we plan and prepare, discover foreign and exotic sights, and later reminisce about our shared experiences. It is no exaggeration to say that these trips can often become a defining moment in the history of a high-performing team.

A Leader's Commitment

Of course, all of these activities require the careful attention of a committed team leader. A good leader must actively engage with and participate in these activities with the team, leading from the front to build the team to its full potential. The leader's commitment to the team makes all of these activities work. The leader is right there at every weekly meeting. The leader is there doing the same Q&A for the hundredth time with the same attention and care given during the tenth time. The leader is proactive about winning the incentive trip challenge—encouraging team members from start to finish. The leader should be with the team on the incentive trips, supporting the newer members and guiding them through the exciting journeys with wisdom and patience. A good leader will do this because team building is not about grinding people through a program to generate sales; team building is about investing in genuine relationships with real people through a shared vision and shared experiences.





Four Team-building Strategies

Finally, let us talk about the four strategies for successful team building: clear expectations, open communication, rewarding engagement, and continued investment.

First, it is essential to set clear expectations for the team so all team members understand what it is trying to accomplish. Can the team members clearly state the team's collective goals? Do they understand their roles and responsibilities in bringing these goals to fruition? Do they agree with these expectations? These expectations must be discussed and negotiated, not forced or fought over. A good leader will not simply dictate the team's goals and expectations but will communicate with the team members to discover a shared vision for the team.

That is why open communication is the next crucial team-building strategy. The best teams foster a culture of open and honest communication. Team members should feel comfortable sharing their thoughts, ideas, and concerns, even if they might contradict the leader or other members. They must also feel comfortable receiving constructive criticism and suggesting creative solutions to the team's problems. For example, if the team did not meet the sales target this month, team members need to be able to discuss why constructively. Team leaders should take charge and moderate team discussions, and encourage a culture of respectful and open communication.



The third strategy is rewarding engagement. Team building is an evolving experiment. Only by trying out the ideas can we know if they work well, if at all. The best teams foster an open and cooperative environment, and at the same time, recognize and reward excellence in their members. A good team environment is one in which individuals can excel to benefit all. Team members should be recognized for various virtues—not only based on measurable achievements such as sales or recruitment but also on their work ethics, consideration for others, and willingness to help. A good team keeps a close eye on its members

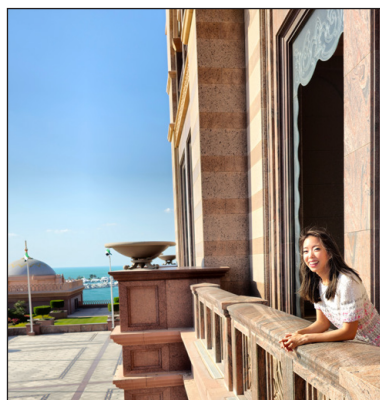
and makes an effort to celebrate every beneficial talent or attribute that its members contribute to the team. Such recognition will make the members feel appreciated and boost their morale and willingness to continue their excellence.

The final key strategy for successful team building is continued investment. Teams require maintenance. Without continued investment, teams tend to stagnate. Successful teams without proper maintenance can petrify into formal bureaucracy or fall into anarchy and apathy. Leaders must continue to invest in their team with regular team-building activities to keep the expectations clear, communications open, and purposes united. Remember that leaders exist to serve the team. That means leading by example from the front and giving more time, effort, patience, and engagement than the team members.



Let us talk again about the incentive trip. It is not simply a reward for good performance. It is also the perfect occasion to exercise the four team-building strategies. To earn a spot on the incentive trip, the team has to set its sight on a shared goal of completing the challenge. That goal will get the conversation flowing as the leader leads the team in discussions about what the incentive trip requires and each member's motivations and devise a plan for completing the challenge. The leader must carefully manage the team throughout the process, identifying natural leaders and helpers and nurturing their skills and confidence. And as a recurring challenge, it asks from the team leader and members the kind of long-term investment that builds genuinely effective teams.

E. Excel is a company built on the excellence of our teams. Over the years, we have seen our teams unite unlikely individuals into an unstoppable force. We have seen good teams rise and stand the test of time. We have many incredible and high-performing teams as part of the E. Excel family. We are united as a single team working toward our mission: to share the gifts of health and knowledge with mankind. It takes team effort to empower those around us to live better and healthier through the knowledge of Nutritional Immunology. Learning is a skill of a lifetime, and lifelong learning about our health is more relevant now than ever before. Let us keep striving to make E. Excel the greatest team for human health and well-being there is!



The Professional Development article is contributed by Elei Zhang, JD.

Knowledge is power. Knowledge is instrumental to value-creation and is a critical asset in life. It is in many ways the primary instrument of progress and innovation. However, knowledge can be messy, particularly when false. Today, information spreads rapidly and comprehensively, and websites and social media outlets are easy access points for false information.

We're here to help discern fact from fiction. Knowledge becomes powerful in the right culture—collectively sharing in the truth and continually seeking progress and ideas. Building the right knowledge base is neither a short-term effort nor a one-off project. It is a lifelong process of discovery.

Milk

“Drink more milk for strong, healthy bones!” Sounds familiar? Many grow up hearing this well-meaning advice. But science has suggested otherwise. Let us address the elephant, or rather the cow, in the room and separate the myths from the facts.



Myth: Cow's milk can prevent osteoporosis.

Truth: Cow's milk is the traditional go-to for strong bones. But what if we told you research suggests that cow's milk might not be the wonder drink we thought it was?

One study followed nearly 78,000 women for 12 years and found no evidence that milk prevented bone fractures. Another study found that neither dairy intake nor higher calcium intake from both supplements and dietary sources protected teenage girls from stress fractures. And for men who chugged down cow's milk in their teen years? The more they drank, the higher their risk of hip fracture in adulthood!

So maybe it is time to rethink the milk mustache and turn to other calcium-rich sources, like spinach and soy. They are lower in calories, cholesterol-free, and packed with phytonutrients.

Myth: Kids need milk to grow strong and healthy.

Truth: There is an age-old myth that kids need to chug milk like there is no tomorrow to become strong and healthy. But it is not entirely true. After babies are weaned off breast milk or formula, they do not need any type of milk to be healthy. And let us not forget about the downsides of too much cow's milk—like colic and type 1 diabetes. Research findings published in *The American Journal of Clinical Nutrition* found that kids who guzzled cow's milk before their first birthday had a higher risk of developing type 1 diabetes. And do not get us started on the “reduced-fat milk prevents childhood obesity” myth. There is no proof behind that nonsense.

While milk does contain calcium and vitamin D, there are plenty of other ways to get those nutrients—like munching on leafy greens, nuts, seeds, and mushrooms. So maybe it is time to give the cows a break and try some plant-based options instead.



Myth: Cow's milk with added DHA is good for brain power.

Truth: Let us be real—we do not expect cows to be geniuses. They are great for producing milk, but when it comes to brain power, we need to turn to human milk. Docosahexaenoic acid (DHA) is an omega-3 fatty acid that infants need, especially during the first six months of their lives, for proper development of the brain, nervous system, and eyes.

Cow's milk is not a rich source of DHA. Most infant formulas are based on cow's milk, and may have DHA added in.

Breast milk naturally contains DHA. Studies have shown that breastfed infants tend to have higher levels of DHA in their blood, and better cognitive and visual development, compared to formula-fed infants. So, if you want your baby to grow up to be the next Einstein or Picasso, breast milk is the way to go. And do not forget, breast milk has all the other important nutrients your baby needs, too. It is like a full-course meal in liquid form! So let us raise a glass of breast milk to smart and healthy babies everywhere!

Myth: Cow's milk contains immunoglobulins, which are good for the immune system.

Truth: Sorry to burst your bubble, but cow's milk and breast milk are as different as cows and humans. Breast milk contains immunoglobulin A (IgA), which helps protect human babies from infections. Cow's milk, on the other hand, has immunoglobulin G (IgG), which is great for protecting baby cows. They just do not match! While it is controversial that bovine IgG can help human babies, there is no doubt that the immunoglobulins in breast milk can help human babies defend against infections and support the development of their immune systems.

And do not even get us started on pasteurization—it can zap the immunoglobulins faster than you can say “moo.”



Myth: Cow's milk contains iron, while breast milk does not.

Truth: Cow's milk has iron, but it is not the same as the iron found in breast milk. The iron in breast milk is bound to lactoferrin, which helps make the iron to be more easily absorbed. Research shows that high levels of iron can promote the growth of harmful bacteria in the baby's gut, but the iron bound to lactoferrin does not have this harmful effect. Lactoferrin also helps regulate the absorption and utilization of iron in the baby's body. And if that is not enough, lactoferrin has antimicrobial properties to keep the baby healthy. So, sure, cow's milk has iron, but breast milk has the real MVPs—heme iron and lactoferrin.

Myth: Reduced-fat milk is healthier.

Truth: Ah, the old switcheroo—choosing reduced-fat milk over whole milk to lose weight. It is like getting a salad drowned in creamy thousand-calorie dressing and calling it a healthy meal. Reduced-fat milk is labeled as “2% milk.” Do not be fooled by the big “2%” label on the milk carton—it does not mean that two percent of the calories is from fat. It means that two percent of the total weight of the milk is actually milkfat.

In reality, whole milk has close to 50 percent of its calories as fat, two-percent milk has about 35 percent of its calories as fat, and one-percent milk has about 20 percent as fat.

So, if you are drinking reduced-fat milk to lose weight, you might not get any significant health benefits. Instead, try reaching for leafy greens and other low-calorie options, and let the cows keep their milk to themselves.

Myth: Cow's milk is "nature's perfect food."

Truth: Cow's milk is a beverage that has been udderly embraced by humans for centuries, but it is not exactly an ideal food for our bodies. Over 60 percent of people worldwide are lactose intolerant, meaning they have difficulty digesting lactose (the sugar found in milk). This can lead to unpleasant symptoms like bloating, cramping, and diarrhea. And if that is not enough to steer you away from the cow juice, regular consumption of dairy products has been linked to an increased risk of certain types of cancer, including prostate, breast, and ovarian cancers. So, while cow's milk may be perfect for little baby cows, we humans can easily obtain all the necessary nutrients we need from a well-balanced diet that includes plenty of plant-based sources of protein, calcium, and other essential nutrients.



Myth: Cow's milk containing added oligosaccharides is better.

Truth: Do not be fooled by fancy formula claims! Adding oligosaccharides to milk may sound like a good idea, but it is not the same as getting the real deal from breast milk. Breast milk contains oligosaccharides that scientists cannot replicate in a lab yet, so the ones added to cow's milk fall short. While oligosaccharides may provide some benefits to the gut microbiome, breast milk contains many other nutrients that are crucial for healthy development. Plus, switching babies from breast milk to formula often causes gastroenteritis, a condition characterized by inflammation of the digestive tract, and who wants that? Breast milk has everything a growing baby needs—from antibodies to enzymes and prebiotics—to build a strong immune system and healthy gut microbiome. So, if you want your little ones to thrive, give them the good stuff "straight from the tap."



Myth: Cow's milk that contains only A2 beta-casein proteins is better.

Truth: Move over, Team A1 milk, the A2 gang is here to steal the spotlight! But before you jump on the bandwagon, let us clear things up: While some claim that A2 milk, which contains only the A2 beta-casein protein, is the better dairy and easier to digest, there is actually no evidence to back up these claims. Most milk contains a mix of A1 and A2 beta-casein proteins. Studies have shown that A1 milk and A2 milk are comparable and easy to digest for most people. So, whether you are Team A1 or Team A2, just remember that you can do without both types and make more room for a healthy and balanced plant-based diet.



Myth: Milk containing colostrum is better than other milk.

Truth: Did you know that colostrum is the superhero of milk? It is the first milk produced by mammals and contains high levels of antibodies and other immune factors to protect newborns from infections. Some companies will sell colostrum, or milk products that claim to have added colostrum, for added health benefits. We hate to break it to you but there is no scientific evidence to support these claims. While colostrum is amazing for newborns, consuming it as an adult will not give you any superpowers. It is not any healthier, it is just milk with a fancy name, so do not be fooled by marketing gimmicks.

Myth: If the mother is unhealthy or malnourished, formula would be more nutritious than breast milk.

Truth: Sure, a mother's diet can affect the quality of her breast milk, but formula is not necessarily the holy grail. In fact, formula lacks many of the unique and essential nutrients found in breast milk that are critical for a baby's healthy development. While there are some situations when a mother should not breastfeed, such as if she has an infectious disease, is on certain medications, has been drinking alcohol, or has had breast surgery, in most cases, her breast milk is still nutritious for her baby. Plus, let us not forget that formula can be quite pricey, and preparing it correctly can be a tricky task, increasing the risk of potential health problems. So, instead of ditching the breast and reaching for the bottle, it is important for mothers to focus on maintaining a well-balanced diet and seek support from healthcare providers.

There are treasure troves of mysteries in nature waiting to be discovered and explored. Countless scientists have devoted themselves to unraveling them in the hopes of improving human health and wellbeing. Their work is vital to understanding and treating disease.

We bring you their research findings in our goal to enrich and expand public knowledge.

Olive Leaf (*Olea europaea* L. *folium*)



Olive Leaf May Help Prevent Gout

Gout is often treated with medications known as xanthine oxidase inhibitors to lower serum urate levels. Researchers have found that olive leaf extract can act like gout medications and significantly inhibit the activity of xanthine oxidase.

White WB. Gout, xanthine oxidase inhibition, and cardiovascular outcomes. *Circulation*. 2018;138(11):1127–1129. doi.org/10.1161/CIRCULATIONAHA.118.036148

Flemmig J, Kuchta K, Arnhold J, Rauwald HW. *Olea europaea* leaf (Ph.Eur.) extract as well as several of its isolated phenolics inhibit the gout-related enzyme xanthine oxidase. *Phytomedicine*. 2011;18(7):561–566. doi.org/10.1016/j.phymed.2010.10.021

Oleuropein May Exert Protective Actions on the Kidneys

Studies suggest that oleuropein, the main phenolic compound in olive leaves, may exert protective actions on the kidneys. Researchers induced kidney damage in animal models using a glycerol injection, and observed alteration in oxidative conditions, inflammatory reactions, and enhanced apoptotic events in the renal tissue of these animal models. All these biochemical, molecular, and histological alterations were reversed by the administration of oleuropein. This suggests that oleuropein has the potential to be an alternative treatment for acute kidney injury.

Another research studying animal models with kidney ischemia-reperfusion injury (IRI) found that oleuropein administration reduced their kidney IRI as indicated by a significant decrease in plasmatic creatinine, urea, and uric acid concentrations as well as lactate dehydrogenase activity.

Yin M, Jiang N, Guo L, et al. Oleuropein suppresses oxidative, inflammatory, and apoptotic responses following glycerol-induced acute kidney injury in rats. *Life Sci.* 2019;232:116634. doi.org/10.1016/j.lfs.2019.116634

Nasrallah H, Aissa I, Slim C, et al. Effect of oleuropein on oxidative stress, inflammation and apoptosis induced by ischemia-reperfusion injury in rat kidney. *Life Sci.* 2020;255:117833. doi.org/10.1016/j.lfs.2020.117833

Kaeidi A, Sahamsizadeh A, Allahtavakoli M, et al. The effect of oleuropein on unilateral ureteral obstruction induced-kidney injury in rats: the role of oxidative stress, inflammation and apoptosis. *Mol Biol Rep.* 2020;47(2):1371–1379. doi.org/10.1007/s11033-019-05237-0



Olive Leaf May Lower the Risk of Diabetes

Antioxidants in olive leaves may help lower and control blood sugar. This may help those with diabetes and prevent others from getting the disease. Olive leaf extract may also reduce the body's insulin resistance, one of the risk factors for diabetes. Research has shown that oleuropein, a compound in olive leaf, may affect the pancreas directly and enhance insulin secretion.

Hassen I, Casabianca H, Hosni K. Biological activities of the natural antioxidant oleuropein: exceeding the expectation—a mini-review. *J Funct Foods.* 2015;18:926–940. doi.org/10.1016/j.jff.2014.09.001

Oleuropein Is Associated with Improvement in Insulin Sensitivity

A study with overweight subjects showed that compared to the placebo, oleuropein supplementation was associated with a significant improvement in insulin sensitivity and pancreatic β -cell secretory capacity. In a different study with hypertensive volunteers, researchers found that oleuropein decreased fasting blood glucose along with other markers of metabolic syndrome.

Another study found that subjects who ate oleuropein together with a Mediterranean diet had significantly lower blood glucose, dipeptidyl-peptidase-4 (DPP-4) protein concentration, and DPP-4 activity as well as higher serum insulin. The effects of oleuropein on blood glucose and DPP-4 were associated with a significant reduction in the markers of oxidative stress.

In a study using chocolate, researchers found that diabetics who received oleuropein-enriched chocolate had a much smaller increase in blood glucose compared to those who received normal chocolate.



de Bock M, Derraik JG, Brennan CM, et al. Olive (*Olea europaea* L.) leaf polyphenols improve insulin sensitivity in middle-aged overweight men: a randomized, placebo-controlled, crossover trial. *PLoS One.* 2013;8(3):e57622. doi.org/10.1371/journal.pone.0057622

Hermans MP, Lempereur P, Salembier JP, et al. Supplementation effect of a combination of olive (*Olea europea* L.) leaf and fruit extracts in the clinical management of hypertension and metabolic syndrome. *Antioxidants (Basel).* 2020;9(9):872. doi.org/10.3390/antiox9090872

Del Ben M, Nocella C, Loffredo L, et al. Oleuropein-enriched chocolate by extra virgin olive oil blunts hyperglycaemia in diabetic patients: results from a one-time 2-hour post-prandial cross over study. *Clin Nutr.* 2020;39(7):2187–2191. doi.org/10.1016/j.clnu.2019.09.006

Violi F, Loffredo L, Pignatelli P, et al. Extra virgin olive oil use is associated with improved post-prandial blood glucose and LDL cholesterol in healthy subjects. *Nutr Diabetes*. 2015;5(7):e172. doi.org/10.1038/nutd.2015.23

Oleuropein May Decrease Diabetic Renal Complications

In animal models with renal hypertension and type 2 diabetes, researchers found that oleuropein reduced serum total cholesterol, LDL (“bad”) cholesterol, triglycerides, and systolic blood pressure. It also increased glucose tolerance, serum HDL (“good”) cholesterol, and erythrocyte superoxide dismutase. Other studies show that oleuropein has beneficial effects on kidney function tests, leukocyte infiltration, glomerular hypertrophy and glomerulosclerosis in diabetic rats. This means there is a potential to decrease diabetic complications.



Khalili A, Nekooeian AA, Khosravi MB. Oleuropein improves glucose tolerance and lipid profile in rats with simultaneous renovascular hypertension and type 2 diabetes. *J Asian Nat Prod Res*. 2017;19(10):1011–1021. doi.org/10.1080/10286020.2017.1307834

Ahmadvand H, Shahsavari G, Tavafi M, et al. Protective effects of oleuropein against renal injury oxidative damage in alloxan-induced diabetic rats; a histological and biochemical study. *J Nephropathol*. 2017;6(3):204–209. doi.org/10.15171/jnp.2017.34

Olive Leaf Extract May Prevent Arterial Plaques

Olive leaf extract can protect human coronary artery endothelial cells from inflammation and DNA damage caused by serum amyloid A—a substance that promotes inflammation and plaque formation in blood vessels.

Burja B, Kuret T, Janko T, et al. Olive leaf extract attenuates inflammatory activation and DNA damage in human arterial endothelial cells. *Front Cardiovasc Med*. 2019;6:56. doi.org/10.3389/fcvm.2019.00056



Treatment with Oleuropein Could Help Prevent Heart Failure

Researchers studied how oleuropein could affect the development of heart failure. Heart attacks were induced in animal models. Those that received oleuropein before the heart attack had reduced infarction size and reduced cardiac ischemia-reperfusion injury. Normally a heart attack is associated with a decrease in left ventricular systolic pressure, stroke volume, ejection fraction, and cardiac output. However, the treatment with oleuropein prevented the reduction of these factors.

Esmailidehaj M, Bajoovand S, Rezvani ME, Sherifidehaj M, Hafezimoghadam Z, Hafzibarjin Z. Effect of oleuropein on myocardial dysfunction and oxidative stress induced by ischemic-reperfusion injury in isolated rat heart. *J Ayurveda Integr Med*. 2016;7(4):224–230. doi.org/10.1016/j.jaim.2016.08.002

Janahmadi Z, Nekooeian AA, Moaref AR, Emamghoreishi M. Oleuropein attenuates the progression of heart failure in rats by antioxidant and antiinflammatory effects. *Naunyn Schmiedebergs Arch Pharmacol.* 2017;390(3):245–252. doi.org/10.1007/s00210-016-1323-6

Menezes RCR, Peres KK, Costa-Valle MT, et al. Oral administration of oleuropein and olive leaf extract has cardioprotective effects in rodents: a systematic review. *Rev Port Cardiol.* 2022;41(2):167–175. doi.org/10.1016/j.repc.2021.05.011

High Levels of Oleuropein May Protect Heart Muscle and Reduce Cardiac Injury

Researchers found that high concentrations of oleuropein prevented heart attack-induced cardiac dysfunction by improving cardiac contractility, overall heart function, and cardiac output in their animal models. Other studies found that oleuropein could protect the heart muscle by reducing cardiac injury markers and restoring hemodynamic parameters after a heart attack. A heart attack can be exacerbated by acrolein, a type of chemical that is found in cigarette smoke. Using animal models, scientists found that when heart attacks were aggravated by acrolein, the rats that received oleuropein beforehand had less damage to their heart and less infiltration of inflammatory cells.

Menezes RCR, Peres KK, Costa-Valle MT, et al. Oral administration of oleuropein and olive leaf extract has cardioprotective effects in rodents: a systematic review. *Rev Port Cardiol.* 2022;41(2):167–175. doi.org/10.1016/j.repc.2021.05.011

Mnafgui K, Khelif I, Hajji R, et al. Preventive effects of oleuropein against cardiac remodeling after myocardial infarction in Wistar rat through inhibiting angiotensin-converting enzyme activity. *Toxicol Mech Methods.* 2015;25(7):538–546. doi.org/10.3109/15376516.2015.1053648

Xu Y, Wu L, Chen A, Xu C, Feng Q. Protective effects of olive leaf extract on acrolein-exacerbated myocardial infarction via an endoplasmic reticulum stress pathway. *Int J Mol Sci.* 2018;19(2):493. doi.org/10.3390/ijms19020493



Olive Leaf Extract May Lead to Lower Blood Pressure and Better Vascular Function

Researchers have found that olive leaf extract led to improvements in cardiac and renal hemodynamic parameters. High doses were more effective in reducing blood pressure and the risk of cardiovascular disease as well as improving heart performance. In animal models with high blood pressure, researchers found that chronic consumption of olive leaf extract reduced blood pressure and improved vascular function. Olive leaf extract also reduced levels of reactive oxygen species, thereby leading to reduced levels of pro-inflammatory cytokines. In human studies, scientists found that olive leaf extract lowered both systolic and diastolic blood pressure as well as LDL (“bad”) cholesterol and triglyceride levels. A reduction in interleukin-8 was also seen, which could lead to lower levels of inflammation.

Ivanov M, Vajic UJ, Mihailovic-Stanojevic N, et al. Highly potent antioxidant *Olea europaea* L. leaf extract affects carotid and renal haemodynamics in experimental hypertension: the role of oleuropein. *EXCLI J.* 2018;17:29–44. doi.org/10.17179/excli2017-1002

Romero M, Toral M, Gómez-Guzmán M, et al. Antihypertensive effects of oleuropein-enriched olive leaf extract in spontaneously hypertensive rats. *Food Funct.* 2016;7(1):584–593. doi.org/10.1039/c5fo01101a

Lockyer S, Rowland I, Spencer JPE, Yaqoob P, Stonehouse W. Impact of phenolic-rich olive leaf extract on blood pressure, plasma lipids and inflammatory markers: a randomised controlled trial. *Eur J Nutr.* 2017;56(4):1421–1432. doi.org/10.1007/s00394-016-1188-y

Olive Leaf May Help With Weight Management

Olive leaf extract may prevent unwanted weight gain and reduce risk of obesity. A study using animal models assessed how oleuropein could mitigate the effects of a high-cholesterol diet. The animals that consumed oleuropein had lower body weight, triglyceride levels, and levels of fatty liver as well as less fat tissue. Another study looked at the effects of oleuropein in a high-fat diet and found that the animals given oleuropein had significantly lower body weight and serum triglyceride and lipid levels even though they ate a high-fat diet. Oleuropein could lower body fat and weight gain in animals fed with high-cholesterol and high-fat diets. It might also help manage appetite and overeating.

Hadrich F, Mahmoudi A, Bouallagui Z, et al. Evaluation of hypocholesterolemic effect of oleuropein in cholesterol-fed rats. *Chem Biol Interact.* 2016;252:54–60. doi.org/10.1016/j.cbi.2016.03.026

van der Stelt I, Hoek-van den Hil EF, Swarts HJM, et al. Nutraceutical oleuropein supplementation prevents high fat diet-induced adiposity in mice. *J Funct Foods.* 2015;14:702–715. doi.org/10.1016/j.jff.2015.02.040

Menezes RCR, Peres KK, Costa-Valle MT, et al. Oral administration of oleuropein and olive leaf extract has cardioprotective effects in rodents: a systematic review. *Rev Port Cardiol.* 2022;41(2):167–175. doi.org/10.1016/j.repc.2021.05.011



Black Goji Berries (*Lycium ruthenicum*)

Black Goji Berries Contain Potent Antioxidants

Research shows that both black and red goji berries are rich in phytochemicals and show antioxidant capacities. However, black goji berry tea had higher levels of phytochemicals and antioxidants than red goji berry tea. Black goji berry tea had 3.5 times the level of total polysaccharides, two times the level of total polyphenols, and five times the antioxidant capacity of red goji berry tea.

Liu B, Xu Q, Sun Y. Black goji berry (*Lycium ruthenicum*) tea has higher phytochemical contents and *in vitro* antioxidant properties than red goji berry (*Lycium barbarum*) tea. *Food Qual Saf.* 2020;4(4):193–201. doi.org/10.1093/fqsaf/fyaa022

Black Goji Berries Have a Higher Phenolic Content Than Blueberries

The total phenolic content of black goji berries is about 69 mg gallic acid/g compared to blueberries, which have about 9.44 mg gallic acid/g.

Yossa Nzeuwa IB, Nea F, Makemteu J, et al. Comparative study of polyphenols quantification, total phenolic content, and antioxidant activities of the fruits of three plants of the family of Solanaceae: *Lycium ruthenicum*, *Lycium barbarum*, and *Lycium Chinense*. *Invest Med Chem Pharmacol*. 2022;5(62):67. doi.org/10.31183/imcp.2022.00067

Huang WY, Zhang HC, Liu WX, Li CY. Survey of antioxidant capacity and phenolic composition of blueberry, blackberry, and strawberry in Nanjing. *J Zhejiang Univ Sci B*. 2012;13(2):94–102. doi.org/10.1631/jzus.B1100137



Black Goji Berries May Help Reduce Inflammation in Gouty Arthritis

In animal models suffering from gouty arthritis, TNF- α , interleukin-1 β , interleukin-18, prostaglandin E₂, cyclooxygenase-1, and paw swelling were significantly increased. However, treatment with anthocyanin extracts from black goji berries significantly reduced these indicators of inflammation. The nutrients in black goji berries may significantly reduce gout-related inflammation.

Zhang G, Chen S, Zhou W, et al. Anthocyanin composition of fruit extracts from *Lycium ruthenicum* and their protective effect for gouty arthritis. *Ind Crops Prod*. 2019;129:414–423. doi.org/10.1016/j.indcrop.2018.12.026

Polysaccharides in Black Goji Berries Can Decrease Levels of Pro-inflammatory Markers

Polysaccharides are known to have potent anti-inflammatory properties. A polysaccharide in black goji berries, LRGP3, could inhibit the expression of inflammatory cytokines. In research done with animal models, black goji berry extract was found to decrease levels of pro-inflammatory markers like tumor necrosis factor- α , cyclooxygenase-2, nuclear factor kappa B, and interleukin-1 β —all of which are hallmarks of inflammatory conditions. In other studies, researchers found that black goji berries may be a promising functional food for inflammatory bowel disease as they can inhibit colonic inflammation by regulating mitogen-activated protein kinase pathways and downregulating nuclear factor kappa B.

Peng Q, Liu H, Lei H, Wang X. Relationship between structure and immunological activity of an arabinogalactan from *Lycium ruthenicum*. *Food Chem*. 2016;194:595–600. doi.org/10.1016/j.foodchem.2015.08.087

Zong S, Yang L, Park HJ, Li J. Dietary intake of *Lycium ruthenicum* Murray ethanol extract inhibits colonic inflammation in dextran sulfate sodium-induced murine experimental colitis. *Food Funct*. 2020;11(4):2924–2937. doi.org/10.1039/d0fo00172d

Black Goji Berry Extract Can Help Prevent Fatty Liver Disease

Researchers fed mice a high-fat diet to induce fatty liver disease, and then treated them with black goji berry extract. They found that black goji berry extract could help reduce triglycerides, total cholesterol, aspartate aminotransferase, and alanine aminotransferase in the blood, and improve glucose metabolism and insulin sensitivity. High concentrations of aspartate aminotransferase and alanine aminotransferase in the blood indicate liver damage.



Lin J, Zhang Y, Wang X, Wang W. *Lycium ruthenicum* extract alleviates high-fat diet-induced nonalcoholic fatty liver disease via enhancing the AMPK signaling pathway. *Mol Med Rep*. 2015;12(3):3835–3840. doi.org/10.3892/mmr.2015.3840



Black Goji Berry Anthocyanins May Alleviate Memory Dysfunction and Neuroinflammation

Black goji berries may improve memory capacity. Researchers have found that black goji berry anthocyanins could improve the memory capacity of their animal models and significantly reduce markers of neuronal oxidative stress and inflammation in the hippocampus tissue, a part of the brain that helps with memory. In other research, the anthocyanins in black goji berries could alleviate memory dysfunction and neuroinflammation in animal models.

Wu X, Li X, Liang S, et al. Neuroprotective effect of anthocyanin extract from *Lycium ruthenicum* Murray in A β 1-42-induced rat model of AD. *Preprints*. 2017;2017050144. doi.org/10.20944/preprints201705.0144.v1

Chen S, Zhou H, Zhang G, et al. Anthocyanins from *Lycium ruthenicum* Murr. ameliorated d-Galactose-induced memory impairment, oxidative stress, and neuroinflammation in adult rats. *J Agric Food Chem*. 2019;67(11):3140-3149. doi.org/10.1021/acs.jafc.8b06402

Anthocyanins From Black Goji Berries Can Encourage the Growth of a Healthy Gut Microbiome

Anthocyanins from black goji berries have been reported to encourage the growth of healthy human gut microbiota and the synthesis of short-chain fatty acids, both of which positively impact gastrointestinal health. Anthocyanins significantly increase the population of friendly gut bacteria, such as *Bifidobacterium*, while reducing the population of "bad" bacteria, such as *Clostridium*. In animal models, research has shown that giving mice anthocyanins from black goji berries led to a stronger intestinal barrier and proliferation of friendly gut bacteria. Other mice fed black goji berries had improved intestinal immune barrier functions and reduced intestinal permeability.

Yan Y, Peng Y, Tang J, et al. Effects of anthocyanins from the fruit of *Lycium ruthenicum* Murray on intestinal microbiota. *J Funct Foods*. 2018;48:533-541. doi.org/10.1016/j.jff.2018.07.053

Tian B, Zhao J, An W, et al. *Lycium ruthenicum* diet alters the gut microbiota and partially enhances gut barrier function in male C57BL/6 mice. *J Funct Foods*. 2019;52:516-528. doi.org/10.1016/j.jff.2018.11.034

Black Goji Berries May Have Immunomodulatory Effects

Researchers looked at mouse models with cyclophosphamide-induced immunosuppression. Administration of polysaccharide from black goji berries boosted thymus and spleen recovery, B and T cell proliferation, phagocytic activities of peritoneal macrophages, and restoration of the cytokine profile.

Gong Y, Wu J, Li ST. Immuno-enhancement effects of *Lycium ruthenicum* Murr. polysaccharide on cyclophosphamide-induced immunosuppression in mice. *Int J Clin Exp Med*. 2015;8(11):20631-20637. Accessed February 16, 2023. www.ncbi.nlm.nih.gov/pmc/articles/PMC4723828/



Black Goji Berry Anthocyanins May Modulate Arterial Inflammation and Liver Lipid Metabolism

Anthocyanins from black goji berries may reduce serum triglycerides, cholesterol, LDL-C, and TNF- α levels, which in turn can reduce the risk of atherosclerosis. They may also increase HDL-C ("good" cholesterol) concentrations. Black goji berries can also significantly increase the levels of good bacteria in the gut while reducing levels of bad bacteria, which in turn can modulate the signaling pathways of arterial inflammation and liver lipid metabolism.

Luo Y, Fang JL, Yuan K, Jin SH, Guo Y. Ameliorative effect of purified anthocyanin from *Lycium ruthenicum* on atherosclerosis in rats through synergistic modulation of the gut microbiota and NF- κ B/SREBP-2 pathways. *J Funct Foods*. 2019;59:223–233. doi.org/10.1016/j.jff.2019.05.038



Red Goji Berries (*Lycium barbarum*)

Red Goji Berries Can Protect the Eyes

Goji berries contain high levels of antioxidants, such as zeaxanthin, which can help protect against age-related eye diseases. Researchers have found that elderly individuals (aged 65 – 70 years) who received daily supplementation of red goji berries had higher antioxidant capacity and zeaxanthin levels compared to the placebo group. The placebo group demonstrated hypopigmentation and soft drusen accumulation in the macula of the eye, which was associated with age-related macular degeneration, while the group that received red goji berries remained stable.

Bucheli P, Vidal K, Shen L, et al. Goji berry effects on macular characteristics and plasma antioxidant levels. *Optom Vis Sci*. 2011;88(2):257–262. doi.org/10.1097/OPX.0b013e318205a18f

Red Goji Berries Are a Good Source of Antioxidants

Goji berries contain a variety of antioxidants. Among these antioxidants, zeaxanthin dipalmitate (a carotenoid) is present in the largest amount. Goji berries contain the highest known levels of zeaxanthin of any food. Zeaxanthin is a compound that the human body cannot make and must be acquired from the diet. It is especially important for eye health as it is one of the carotenoid pigments that selectively concentrate in the center of the retina.

Inbaraj BS, Lu H, Hung CF, Wu WB, Lin CL, Chen BH. Determination of carotenoids and their esters in fruits of *Lycium barbarum* Linnaeus by HPLC-DAD-APCI-MS. *J Pharm Biomed Anal*. 2008;47(4–5):812–818. doi.org/10.1016/j.jpba.2008.04.001

Li X, Holt RR, Keen CL, et al. Potential roles of dietary zeaxanthin and lutein in macular health and function [published online ahead of print, 2022 Sep 12]. *Nutr Rev.* 2022;nuac076. doi.org/10.1093/nutrit/nuac076

Red Goji Berries May Support Immune Function

In a study with older adults (55 – 72 years old), the group that received red goji berry juice showed a significant increase in the number of lymphocytes and levels of interleukin-2 and immunoglobulin G (chemicals that help immune function). Compared to the placebo group, the red goji berry group also had improvements in general feelings of well-being and increased short-term memory and focus. In a different study, researchers found that Chinese elderly who consumed red goji berries had a significantly stronger response to the influenza vaccine compared to the placebo group, which helps enforce immune defense.



Amagase H, Sun B, Nance DM. Immunomodulatory effects of a standardized *Lycium barbarum* fruit juice in Chinese older healthy human subjects. *J Med Food.* 2009;12(5):1159–1165. doi.org/10.1089/jmf.2008.0300

Vidal K, Bucheli P, Gao Q, et al. Immunomodulatory effects of dietary supplementation with a milk-based wolfberry formulation in healthy elderly: a randomized, double-blind, placebo-controlled trial. *Rejuvenation Res.* 2012;15(1):89–97. doi.org/10.1089/rej.2011.1241

Red Goji Berries Have Anti-inflammatory Effects

In animal models, researchers found a decreased inflammatory response in the rats fed a diet with red goji berry extract, compared to the ones that received a normal diet. There were significant decreases in the levels of inflammatory markers—C-reactive protein, glutamic-oxaloacetic transaminase, and creatinine. By providing protection against LPS-induced inflammatory responses, the red goji berry extract protected the animals from systemic inflammation, liver damage, and kidney damage. It also affected how genes related to the inflammatory response were expressed, showing that it may help regulate inflammatory cytokine expression.

Ávila CN, Trindade FMR, Penteado JO, et al. Anti-inflammatory effect of a goji berry extract (*Lycium barbarum*) in rats subjected to inflammation by lipopolysaccharides (LPS). *Braz. Arch. Biol. Technol.* 2020;63:e20180612. doi.org/10.1590/1678-4324-2020180612



Red Goji Berries May Help Reduce Inflammation in Rheumatoid Arthritis

In studies done with animal models induced to have arthritis, researchers observed that the mice given red goji berry polysaccharides had significant improvements in bone damage and bone loss, and significantly reduced expression of inflammatory mediators as well as matrix metalloproteinases—enzymes responsible for degenerative changes in cartilage. The researchers believed that red goji was responsible for preserving the bone integrity in these mice through the down-regulation of inflammatory mediators.

Liu Y, Lv J, Yang B, et al. *Lycium barbarum* polysaccharide attenuates type II collagen-induced arthritis in mice. *Int J Biol Macromol.* 2015;78:318–323. doi.org/10.1016/j.ijbiomac.2015.04.025

Red Goji Berries May Protect against Liver Disease

Zeaxanthin dipalmitate is the main carotenoid in red goji berries and research shows that it may inhibit tissue scarring in the liver. In animal models, it could improve nonalcoholic fatty liver disease by reducing lipid peroxidation levels and oxidative stress. A different study showed that in animal models, zeaxanthin dipalmitate helped improve biomarkers of liver damage, such as serum ALT, AST, ALP, and ALB levels. In studies looking at hepatitis B infections, researchers found that zeaxanthin dipalmitate may help reduce viral replication and serum hepatitis B surface antigen levels.

Bahaji Azami NL, Sun M. Zeaxanthin dipalmitate in the treatment of liver disease. *Evid Based Complement Alternat Med.* 2019;2019:1475163. doi.org/10.1155/2019/1475163



Red Goji Berries May Support Gut Health

Red goji berry polysaccharides can enhance the growth of friendly gut bacteria and change the composition of the gut microbiota to have more beneficial species. They may also enhance the innate immune response and increase the levels of transforming growth factor- β (TGF- β) and interleukin-6 (IL-6) in the serum. These prebiotic effects of red goji berries can have a protective effect against inflammatory bowel disease.

Zhu W, Zhou S, Liu J, McLean RJC, Chu W. Prebiotic, immuno-stimulating and gut microbiota-modulating effects of *Lycium barbarum* polysaccharide. *Biomed Pharmacother.* 2020;121:109591. doi.org/10.1016/j.biopha.2019.109591

Sun Q, Du M, Kang Y, Zhu MJ. Prebiotic effects of goji berry in protection against inflammatory bowel disease [published online ahead of print, 2022 Jan 6]. *Crit Rev Food Sci Nutr.* 2022;1–25. doi.org/10.1080/10408398.2021.2015680

Red Goji Berries Have Neuroprotective Effects

Researchers have found that red goji berries can have a beneficial effect on many diseases that affect the brain. In animal models used to study Alzheimer's disease, researchers found that red goji berries may protect cell viability, reduce cell death, alleviate oxidative stress, and improve cognitive functions. In rats with stroke, researchers found that treatment with red goji berries improved neurological deficits as well as decreased brain swelling and infarct size (the amount of tissue irreversibly damaged when a failure of blood supply causes tissue to die).

Xing X, Liu F, Xiao J, So KF. Neuro-protective mechanisms of *Lycium barbarum*. *Neuromolecular Med.* 2016;18(3):253–263. doi.org/10.1007/s12017-016-8393-y



Red Goji Berries Help Protect the Kidneys

Lycium barbarum polysaccharide 4 (LBP-4) is a major active component of red goji berries. Researchers have found that in animal models with diabetes, treatment with LBP-4 lowered the levels of blood sugar and lipids, improved kidney function, and decreased kidney damage. LBP-4 may decrease oxidative stress and prevent protein kinase C over-activation in the kidneys. Protein kinase C activation has been noted in several kidney diseases, namely diabetic kidney disease and kidney cancer.

Zhao R, Li QW, Li J, Zhang T. Protective effect of *Lycium barbarum* polysaccharide 4 on kidneys in streptozotocin-induced diabetic rats. *Can J Physiol Pharmacol*. 2009;87(9):711–719. doi.org/10.1139/y09-068

Red Goji Berries Help Improve Heart Health

Eating a healthy diet helps improve vascular tone and health, which improves heart health. Adding red goji berries to the diet can help raise HDL (“good”) cholesterol levels and reduce the Framingham predicted long-term cardiovascular disease risk. The Framingham risk score estimates someone’s risk of a heart attack in the next 10 years.

Toh DWK, Xia X, Sutanto CN, et al. Enhancing the cardiovascular protective effects of a healthy dietary pattern with wolfberry (*Lycium barbarum*): a randomized controlled trial [published correction appears in *Am J Clin Nutr*. 2021 Jul 1;114(1):397]. *Am J Clin Nutr*. 2021;114(1):80–89. doi.org/10.1093/ajcn/nqab062

Red Goji Berries Have Antidiabetic Effect

Researchers have found that *Lycium barbarum* polysaccharides in red goji berries can have a remarkable protective effect in patients with type 2 diabetes. They can significantly decrease serum glucose and increase HDL (“good”) cholesterol levels, improve insulin sensitivity, and help control blood sugar in those with type 2 diabetes.

Cai H, Liu F, Zuo P, et al. Practical application of antidiabetic efficacy of *Lycium barbarum* polysaccharide in patients with type 2 diabetes. *Med Chem*. 2015;11(4):383–390. doi.org/10.2174/1573406410666141110153858



Huang R, Wu E, Deng X. Potential of *Lycium barbarum* polysaccharide for the control of glucose and lipid metabolism disorders: a review. *Int. J. Food Prop*. 2022;25(1):673–680. doi.org/10.1080/10942912.2022.2057529

Red Goji Berries Protect Against Gout

Gout occurs when a high concentration of uric acid in the blood crystallizes in the joints. Polysaccharides in red goji berries may reduce serum uric acid levels by promoting uric acid excretion from the kidneys.

Yu X, Zhang L, Zhang P, Zhi J, Xing R, He L. *Lycium barbarum* polysaccharides protect mice from hyperuricaemia through promoting kidney excretion of uric acid and inhibiting liver xanthine oxidase. *Pharm Biol*. 2020;58(1):944–949. doi.org/10.1080/13880209.2020.1817951



Jujube (*Ziziphus jujuba*)

Jujube Can Help with Blood Production

Jujube contains a variety of flavonoids, polysaccharides, terpenoids, saponins, nucleotides, and other plant nutrients. Flavonoids from jujube, such as quercetin and kaempferol, have been found to promote the expression of erythropoietin (EPO), a hormone that stimulates blood production.

Chen J, Tsim KWK. A review of edible jujube, the *Ziziphus jujuba* fruit: a health food supplement for anemia prevalence. *Front Pharmacol.* 2020;11:593655. doi.org/10.3389/fphar.2020.593655

Nishimura K, Matsumoto R, Yonezawa Y, Nakagawa H. Effect of quercetin on cell protection via erythropoietin and cell injury of HepG2 cells. *Arch Biochem Biophys.* 2017;636:11–16. doi.org/10.1016/j.abb.2017.10.013

Xu Y, Tao Z, Jin Y, et al. Flavonoids, a potential new insight of *Leucaena leucocephala* foliage in ruminant health. *J Agric Food Chem.* 2018;66(29):7616–7626. doi.org/10.1021/acs.jafc.8b02739

Gao QH, Wu CS, Yu JG, Wang M, Ma YJ, Li CL. Textural characteristic, antioxidant activity, sugar, organic acid, and phenolic profiles of 10 promising jujube (*Ziziphus jujuba* Mill.) selections. *J Food Sci.* 2012;77(11):C1218–C1225. doi.org/10.1111/j.17503841.2012.02946.x

Jujube May Help Anemia

Researchers induced anemia in mice models. They found that treatment with jujube extract reversed the decreased levels of red blood cells, hemoglobin, and hematocrit in these mouse models. In another study using mice with cancer, researchers found that the levels of red blood cells, hemoglobin, and hematocrit were improved in jujube-treated mice. Researchers believe jujube may increase the level of EPO production, which suggests jujube can increase red blood cell levels.

Periasamy S, Wu WH, Chien SP, Liu CT, Liu MY. Dietary *Ziziphus jujuba* fruit attenuates colitis-associated tumorigenesis: a pivotal role of the NF- κ B/IL-6/JAK1/STAT3 pathway. *Nutr Cancer.* 2020;72(1):120–132. doi.org/10.1080/01635581.2019.1615515

Chen J, Tsim KWK. A review of edible jujube, the *Ziziphus jujuba* fruit: a health food supplement for anemia prevalence. *Front Pharmacol.* 2020;11:593655. doi.org/10.3389/fphar.2020.593655

Jujube May Help with Iron Deficiency Anemia

Erythrophagocytosis is the process by which old red blood cells are cleared away by macrophages, a type of immune cell. This way, the debris is cleared and components of the cell, such as iron, can be recycled and used again to make new cells. Disorders in this process can lead to anemia and upset the iron balance. Researchers have found that jujube extract helps improve iron deficiency anemia in rats. They believe this is due to the jujube extract helping to increase the supply of iron for the formation of new red blood cells.

Chen J, Tsim KWK. A review of edible jujube, the *Ziziphus jujuba* fruit: a health food supplement for anemia prevalence. *Front Pharmacol.* 2020;11:593655. doi.org/10.3389/fphar.2020.593655



Jujube May Help Reduce Blood Pressure

Researchers induced high blood pressure in animal models. They found that compared to the control group that did not receive jujube extract, the rats that were treated with jujube extract had improvements in their blood pressure and mean arterial pressure.

Mohebbati R, Bavarsad K, Rahimi M, Rakhshandeh H, Khajavi Rad A, Shafei MN. Protective effects of long-term administration of *Ziziphus jujuba* fruit extract on cardiovascular responses in L-NAME hypertensive rats. *Avicenna J Phytomed.* 2018;8(2):143–151. Accessed March 30, 2023. www.pubmed.ncbi.nlm.nih.gov/29632845/

Jujube May Increase Immune Cell Numbers

Polysaccharides extracted from jujube were applied onto peritoneal macrophages, and macrophage cell proliferation was noted. These polysaccharides also induced proliferation of lymphocytes in the spleen. Another polysaccharide from jujube was shown to induce cell proliferation of cultured spleen cells.

Chen J, Tsim KWK. A review of edible jujube, the *Ziziphus jujuba* fruit: a health food supplement for anemia prevalence. *Front Pharmacol.* 2020;11:593655. doi.org/10.3389/fphar.2020.593655

Zhao Z, Li J, Wu X, et al. Structures and immunological activities of two pectic polysaccharides from the fruits of *Ziziphus jujuba* Mill. cv. jinsixiaozao Hort. *Food Res. Int.* 2006;39(8):917–923. doi.org/10.1016/j.foodres.2006.05.006

Jujube May Help with Immune Functions

Researchers have found that in rats, jujube can strengthen non-specific immunity by enhancing the proliferation of splenocytes and peritoneal macrophages. They also found that jujube extract could interact with the complement cascade, a series of chemical messages that activates the innate immune system. Other researchers found that jujube polysaccharides could enlarge cell volume and increase the number of cultured lymphocytes.

Li J, Shan L, Liu Y, Fan L, Ai L. Screening of a functional polysaccharide from *Zizyphus Jujuba* cv. *Jinsixiaozao* and its property. *Int J Biol Macromol.* 2011;49(3):255–259. doi.org/10.1016/j.ijbiomac.2011.04.006

Zhao Z, Liu M, Tu P. Characterization of water soluble polysaccharides from organs of Chinese Jujube (*Ziziphus jujuba* Mill. cv. Dongzao). *Eur Food Res Technol.* 2008;226(5):985–989. doi.org/10.1007/s00217-007-0620-1

Jujube Has Anti-inflammatory Activities

Jujube contains a variety of triterpenic acids. These compounds can inhibit the activity of activated inflammatory cells, resulting in an anti-inflammatory effect. Researchers induced inflammation in animal models. Treatment with jujube extract reduced paw edema, granuloma tissue formation, and serum nitrite/nitrate levels. Researchers believe the anti-inflammatory effect of jujube in acute and chronic inflammation is possibly due to inhibiting nitric oxide expression.

Yu L, Jiang BP, Luo D, et al. Bioactive components in the fruits of *Ziziphus jujuba* Mill. against the inflammatory irritant action of *Euphorbia* plants. *Phytomedicine*. 2012;19(3-4):239–244. doi.org/10.1016/j.phymed.2011.09.071

Goyal R, Sharma PL, Singh M. Possible attenuation of nitric oxide expression in anti-inflammatory effect of *Ziziphus jujuba* in rat. *J Nat Med*. 2011;65(3-4):514–518. doi.org/10.1007/s11418-011-0531-0



Jujube May Protect the Kidneys

In rats with kidney damage, the intake of jujube extract improved kidney function, and reduced the severity of kidney damage by reducing levels of creatinine and urea. Researchers believe jujube extract may prevent damage of the tissues of the kidney.

Awad DS, Ali RM, Mhaidat NM, Shotar AM. *Ziziphus jujuba* protects against ibuprofen-induced nephrotoxicity in rats. *Pharm Biol*. 2014;52(2):182–186. doi.org/10.3109/13880209.2013.821665

Jujube May Stimulate Neural Growth

Nerve growth factors promote neurite outgrowth, which is important for brain health. Research shows that applications of jujube extract exerted a similar effect on cultured neuronal cells. Jujube-treated cell cultures showed an increase in expression of neurofilaments, the “scaffolding” involved in the growth and stability of axons (the part of the neuron where electrical impulses travel).

Chen J, Maiwulanjiang M, Lam KY, et al. A standardized extract of the fruit of *Ziziphus jujuba* (Jujube) induces neuronal differentiation of cultured PC12 cells: a signaling mediated by protein kinase A. *J Agric Food Chem*. 2014;62(8):1890–1897. doi.org/10.1021/jf405093f

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