



EDITORIAL BOARD

PATRON

Prof. Dr. Syed Irfan Hyder

EDITOR IN CHIEF

Prof. Dr. Rafeeq Alam Khan

EDITORS

Dr. Sadia Kashif
Dr. Sidra Tanwir

ASSOCIATE EDITORS

Dr. Najeeb Khatiyan
Dr. Rasheeda Fatima
Dr. Anum Arif

CREATIVE DESIGNER

Muhammad Shoab Khan

FROM THE EDITOR'S DESK

DR. SIDRA TANWIR, EDITOR, FACULTY OF PHARMACY, ZIAUDDIN UNIVERSITY

A small clinical trial conducted by Memorial Sloan Kettering Cancer Center is intriguing health care workers as well as general population globally. The study reports remission in every single rectal cancer patient who received an experimental immunotherapy. All of the patients included in the study had rectal cancer in a locally advanced stage, with a rare mutation called mismatch repair deficiency (MMRd) and were administered an immunotherapy drug called dostarlimab. Furthermore, in a follow up ranging from 6-25 months not a single patient has reported reoccurrence to date. The results were so successful that none of the 14 patients who completed the trial needed the planned follow-up treatment of chemo-radiation or surgery, nor did any have significant complications from the drug. Four other patients in the trial are still undergoing treatment but thus far are showing the same promising results.

Although this research shows great potential however the study does have certain stipulations. The sample size of patients was very small. Also long term studies are still needed in order to establish confirmed therapeutic efficacy. The results also only pertain to those who carry a specific abnormality to their rectal cancer known as mismatch repair-deficiency. Based on this, it is also being anticipated that other tumors with a mismatch repair deficiency like those of the pancreas, stomach or bladder, could be effectively treated with the same drug. According to cancer researchers who studied the medicine, it appears to be promising, but a larger-scale trial is required. A success of this nature can revolutionize therapy options in oncology and will also open probable doors for the treatment of other types of cancers.

NUTRACEUTICAL'S ROLE IN PREVENTION AND TREATMENT OF LIFESTYLE DISEASES

PROF. DR. RAFAQ ALAM KHAN, DEAN FACULTY OF PHARMACY, ZIAUDDIN UNIVERSITY

The term nutraceuticals for functional foods was first used by the Foundation for Innovation in Medicine. International Life Sciences Institute defines functional foods as foods having active physiological constituents, thus providing a health benefit beyond basic nutrition when consumed regularly. Physiological active components in foods are now identified as phytochemicals and zoo chemicals that have the potential to reduce the risk for chronic diseases.

Functional foods are largely divided into two categories i.e.

Conventional Foods and
Modified Foods

Conventional foods are naturally occurring, whole-food grains which are abundant in vital nutrients like minerals, antioxidants, vitamins, and lipids which are good for the health. Modified foods are strengthened with added ingredients like minerals, vitamins, probiotics, and fiber to improve health benefits.

Natural functional foods include fruits, vegetables, nuts, seeds, spices, eggs, honey, and fish. Ministry of Health and Welfare Japan (2002) approved about 300 foods as Foods for Specified Health Use (FOSHU). Diet and lifestyle plays a vital role in increasing life expectancy and reducing the risk of diseases. World data shows that Monaco and Japan are

among the countries with high life expectancy i.e. 89.5 and 85 years respectively which is mainly thought to be due to increased consumption of seafood, fresh vegetables and fruits. Thus, a suitable combination of diet, physical activity and rest is important for a better life and for avoiding risks of lifestyle-related diseases (Zasshi, 2007). The Department of Health and Human Services reports that diet plays a role in 5 of the top 10 reasons of death including coronary heart disease (Hasler, 2002).

Foods considered nutraceuticals should meet the following criteria:

- Provide benefits according to the physiological state of the person e.g. physical activity, lactation, and

ARTICLES

pregnancy.

- Reduce the intensity of symptoms in chronic disorders e.g. CVD, diabetes, obesity, and osteoporosis.
- Provide preventive or health-promoting role, when included in the diet (Tur and Bibiloni, 2016).

Studies suggest that citrus flavanones and fiber appear to diminish the hazard of heart disease, cancer, and diabetes. Citrus fruits are a rich source of calcium, potassium, vitamin C, A and B (Xinmiao et al., 2015).

Women consuming >63 mg/day of flavanones have 19% less risk of ischemic stroke than the women consuming <13.7mg/day of flavanones (Cassidy et al., 2012; Testai and Calderone, 2017). Flavones also keep the skin healthy by improving blood flow and delivering nutrients, water and oxygen to the skin.

Lemon juice inhibits the growth of diarrhea-causing bacteria and is also thought to have some antiviral benefits. Citrus fruits and apples moderately reduce the BP and blood lipid levels (Dhandevi and Rajesh, 2015). Citrus limon and pomegranate both have a memory-enhancing effect due to the high concentration of flavanones in these fruits (Riaz et al 2014). Citrus flavonoids exert antioxidant, anti-inflammatory and cholesterol-lowering effects (Panche et al 2016).

Berries, grapes, and pomegranate are effective in reducing cardiovascular risk since containing high amounts of anthocyanins, flavonols and procyanidins (Dhandevi and Rajesh, 2015). Pomegranate prevents inflammation induced by trinitrobenzene sulfonic acid in

rats at the dose of 5ml/kg (Riaz et al 2017).

Spinach is projected as a superfood because of its ingredients and low-calorie intake. Spinach contains antioxidants lutein and zeaxanthin which helps in improving eyesight. Zeaxanthin and carotenoids in spinach remove free radicals from the body, preventing the stomach, mouth and esophagus from cancer. It also protects the eyes from cataracts and age-related macular degeneration. Vitamin A in spinach benefits by preserving mucus membranes essential for normal eyesight. Spinach contains potassium, magnesium, carotenoids and

in calcium and is also high in omega 6 fatty acids, vitamin E, magnesium and fiber contents. Almond lowers cholesterol and reduces the risk of heart disease (Jenkins et al 2002). Eating 28 grams of almonds lower blood sugar levels by as much as 30% in people with diabetes (Cohen and Johnston, 2011).

Cashew is rich in iron, magnesium, copper, lutein, oleic acid and proanthocyanidins. Copper and proanthocyanidins inhibit the growth of tumor cells and thus prevent cancer. High contents of magnesium in cashew encourage a healthy heart, toughen bones, and prevents migraine. High contents of magnesium in cashew promotes a healthy heart, strong bones and prevents migraine.

Magnesium is required for more than 300 essential reactions in the body. It supports maintaining normal nerve and muscle functions. It also helps to strengthen the immune system. High levels of lutein and other antioxidants in cashew protect the eyes from damage and ensures good eyesight.

Walnuts are high in omega-3 fatty acids, antioxidants and phyosterols. The body does not produce omega 3 and 6 fatty acids, so we just have to get them from our diet. They are good for the heart, protect from cancer and help in decreasing depression and the threat of age-related

diseases like Alzheimer's. Turmeric contains Curcumin which has the potential to reduce diabetic complications, improve glycemic index (Abbas et al 2022) and prevent heart diseases, Alzheimer's and cancer. It is a strong anti-inflammatory and antioxidant and also relieves the symptoms of depression and arthritis. Animal studies indicate that Curcumin promotes weight loss, reduces fat and



vitamin C, hence helping maintain BP. Spinach contains anti-inflammatory carotenoids, neoxanthin and violaxanthin which can help in preventing migraine, headaches, asthma, osteoporosis and arthritis. Nuts provide vital proteins, polyunsaturated fats and antioxidants and help live longer than those not taking nuts (Bansal, 2014). Almond is rich

ARTICLES

enhances insulin sensitivity. Curcumin has been found to increase testosterone levels that in turn increase libido.

Garlic is another important functional food that contains allicin. It is an unstable compound, however, its half-life at 23°C in crushed garlic is 2.5 days. Bioavailability of allicin varies from 36–104%, but it is declined to 22–57% when taken with a high-protein meal, due to slow gastric emptying. Garlic compounds have shown broad-spectrum antimicrobial activity against numerous pathogenic bacteria, viruses, fungi, and parasites (Mosbauer et al 2021). Allicin also exhibits antibacterial activity against multidrug-resistant enterotoxigenic strains of *E. coli*. Antifungal action is chiefly effective against *Candida Albicans*. Garlic is also mainly effective against intestinal protozoan parasites such as *Entamoeba histolytica* and *Giardia lamblia*. It also possesses antiviral activity. The antimicrobial effect of allicin is due to its chemical reaction with thiol groups of various enzymes. Garlic prevents the hardening of the arteries and reduces B.P and cholesterol. It is also used for the common cold. Garlic limits the effects of pro-inflammatory cytokines and hence is effective in osteoarthritis.

Ginger contains a bioactive compound, Gingerol responsible for major pharmacological properties. It has anti-cancer, anti-inflammatory and anti-oxidation activities. The anticancer activities are produced via its effect included in apoptosis, cell cycle regulation, cytotoxic activity and inhibition of angiogenesis (Wang et al, 2014). Ginger has been found effective in preventing postoperative vomiting and nausea (Mandal et al, 2014) and also reduces chemotherapy-induced vomiting (Marx et al, 2017). Ginger in a dose of 500 mg to 1 g/day for 3 to 12 weeks significantly reduces pain and disability in osteoarthritis (Bartels et al 2015). Ginger extract inhibits the growth of many types of bacteria, hence effective against oral bacteria linked to gingivitis and periodontitis (Park et al, 2008).

References:

Abbas W, Khan RA, Baig MT, Shaikh SA,

2022. Effect of *Curcuma longa* on glycemia, Neuropathic sensation, and advanced glycation end product in diabetic patients. *Pak. J. Pharm. Sci.* May 2022

Bansal M, 2014. Association of nut consumption with total and cause-specific mortality. *Indian Heart J.* 66: 388-389.

Bartels EM, Folmer VN, Bliddal H, Altman RD, Juhl C, Tarp S, Zhang W, Christensen R, 2015. Efficacy and safety of ginger in osteoarthritis patients: a meta-analysis of randomized placebo-controlled trials. *Osteoarthritis and Cartilage.* 23: 13-21.

Cassidy A, Rimm EB, Reilly EJO, Logroscino G, Kay C, Chiuve SE, Rexrode KM, 2012. Dietary flavonoids and risk of stroke in women. *Stroke.* 43: 946–951. doi:10.1161/STROKEAHA.111.637835.

Cohen AE, Johnston CS, 2011. Almond ingestion at mealtime reduces postprandial glycemia and chronic ingestion reduces hemoglobin A (1c) in individuals with well-controlled type 2 diabetes mellitus. *Metabolism* 60: 1312-1317. DOI: 10.1016/j.metabol.2011.01.017.

Dhandevi PEM and Rajesh J, 2015. Fruit and Vegetable Intake: Benefits and Progress of Nutrition Education Interventions- Narrative Review Article. *Iran J Pub. Health.* 44:1309-1321.

Hasler CM, 2002. Functional Foods: Benefits, Concerns, and Challenges—A Position Paper from the American Council on Science and Health. *J Nutri.* 132, 3772–3781. <https://doi.org/10.1093/jn/132.12.3772>.

Jenkins DJA, Kendall CWC, Marchie A, Parker TL, Connelly PW, Qian W, Haight JS, Faulkner D, Vidgen E, Lapsley KG, Spiller GA, 2002. Dose-response of almonds on coronary heart disease risk factors: blood lipids, oxidized low-density lipoproteins, lipoprotein (a), homocysteine, and pulmonary nitric oxide: a randomized, controlled, crossover trial. *Clinical Trial Circulation.* 106: 1327-32. DOI: 10.1161/01.Cir.0000028421.91733.20.

Mandal P, Das A, Majumdar S, Bhattacharyya T, Mitra A, Kundu R, 2014. The efficacy of ginger added to ondansetron for preventing postoperative nausea and vomiting in ambulatory surgery *Pharmacognosy Res.* 6: 52–57.

Marx W, Karin Ried K, McCarthy AL, Vitetta L, Sali A, McKavanagh D, Isenring L, 2017.

Ginger-Mechanism of action in chemotherapy-induced nausea and vomiting: A review. *Crit Rev Food Sci Nutr.* 57: 141-146. DOI: 10.1080/10408398.2013.865590.

Mösbauer K, Fritsch VN, Adrian L, Bernhardt J, Gruhlke MCH, Slusarenko AJ, Niemeyer D, Antelmann H, 2021. The Effect of Allicin on the Proteome of SARS-CoV-2 Infected Calu-3 Cells. *Front. Microbiol.* 28 <https://doi.org/10.3389/fmicb.2021.746795>.

Panche AN, Diwan D, Chandra SR. 2016. Flavonoids: an overview. *J Nutr Sci.* 2016; 5: e47. Published online. DOI: 10.1017/jns.2016.41

Park M, Bae J, Dae-Sil L. 2008. Antibacterial activity of [10]-gingerol and [12]-gingerol isolated from ginger rhizome against periodontal bacteria. *Phytother Res.* 22: 1446-1449. DOI: 10.1002/ptr.2473.

Riaz A, Khan RA, Algahtani HA, 2014. Memory boosting effect of Citrus limon, Pomegranate and their combinations. *Pak. J. Pharm. Sci.* 27, 1837-1840

Riaz A, Khan RA, Afroz S, Mallick N, 2017. Prophylactic and therapeutic effect of *Punica granatum* in trinitrobenzene sulfonic acid-induced inflammation in rats. *Pak. J. Pharm. Sci.* 30, 155-162.

Testai L, Calderone V 2017. Nutraceutical Value of Citrus Flavonones and Their Implications in Cardiovascular Disease. *Nutrients.* 9: 502. DOI: 10.3390/nu9050502.

Tur JA and Bibiloni MM 2016. *Encyclopedia of Food and Health.*

Wahid S, Alqahtani A, Khan RA, 2020. Nootropic Effects of *C. melo* and *C. lanatus* seed extracts. *BioMed Res Internat.* Article ID 8823038, 7 pages. <https://doi.org/10.1155/2020/8823038>.

Wang S, Zhang C, Yang G, Yang Y. 2014. Biological properties of 6-gingerol: a brief review. *Nat Prod Commun.* 9, 1027-1030.

Xinmiao Lv, Zhao S, Ning Z, Zeng H, Shu Y, Tao O, Xiao C, Lu C, and Liu Y 2015. Citrus fruits as a treasure trove of active natural metabolites that potentially provide benefits for human health. *Chem Cent J.* 9: 68. DOI: 10.1186/s13065-015-0145-9

Zasshi Y, 2007. Role of FOSHU (food for specified health uses) for a healthier life. 127, 407-416. doi:10.1248/yakushi.127.407.

ARTICLES

WHAT SHOULD WE LEARN FROM COVID-19

DR. JAVERIA FAROOQ, DEPT OF PHARMACOGNOSY, FACULTY OF PHARMACY, ZIAUDDIN UNIVERSITY

The outbreak of SARS-Cov-2 virus (COVID-19) began in December 2019 and it was declared a pandemic by the World Health Organization on 11th March 2020. This outbreak toppled lives of everyone and the world literally stopped. COVID-19 brought health emergency, economical and financial crisis, educational institutions and workplace closures, travel bans, COVID-19 restrictions and regulations and many more adversities. We lost millions of lives due to COVID-19. It led people to frustration, depression, isolation and with many psychological disorders. After around 2 years of COVID-19 breakout, finally things have started getting better. The world is opening again and people are returning to their normal life and routine. Although, COVID-19 have given us more calamities however it has also taught us many things as well.

COVID-19 exhibited clear lack of disparities around the world based on ethnicity, race and class. The most significant lesson the world should learn is that we all are same and everyone should

be treated in same manner in every regard. In search of COVID-19 treatment, research was accelerated leading to development of vaccines and various therapeutic approaches for COVID-19. The restriction on hospital visits resulted in introduction of tele-clinics, blood test and radiology services at home which are very beneficial for patients. Another valuable lesson is the emergence of the welcoming technology and switching to digital world for education and work purposes. This might help in providing online teaching to remote areas and access to technology will enable people to work online. The other major lesson we should take from COVID-19 is that we cannot survive alone rather we need to develop communities. It taught us to help, care, share, respect and listen to each other. It proved that we are resilient beings that learn from every adversity and gain strength from it. The most significant lesson however learnt as individuals includes the importance of personal well-being, significance of family and worth of self-care. It is high time that we should value our health and have a

healthy life style with inclusion of some physical activities. COVID-19 taught us the worth of family relationships. For a happy and healthy living it is necessary to have strong relationship with family and friends and the most important thing as an individual is self-care and self-love. COVID-19 gave us the time to think and find activities which make us happy.

As we enter into our normal life and daily routine again, we should consider that this time during COVID was maybe given to us by nature to take a step-back, regain strength and make a fresh start with the lessons learnt and become more productive and a fruitful.



FACULTY UPDATES

An engaging and highly interactive workshop was organized on 15th February 2022 on "Time Management" for the undergraduates and postgraduates. Mr. Subhan Sharif was guest speaker who is a Lead Trainer & Senior Consultant at Canvas Soft. The workshop helped participants to improve their personal effectiveness in both their work and personal lives through improved planning and time management. Another workshop entitled "Step Forward in Competitive World" was arranged on 31st March 2022 with Mr. Ahmed Farhan. He is leading the Training & Development Department of ICI Pharmaceutical Pakistan. The workshop included several activities for students to build their communication and team leading skills.

A lecture of Dr. Atif Ali Khan was organized on 'Secondary metabolites of the medicinal plant Rey noutrica' on 22nd

Feb, 2022. Two more lectures were also arranged where the speakers were part of the alumni of Faculty of Pharmacy. The first one was entitled 'Career Counselling: Do's and Don'ts of Pharmacy' and was held on 12th April 2022. Dr. Mehak Tahir was the guest speaker who graduated from Ziauddin Faculty of Pharmacy in 2016 (Batch-8) and is currently working in Novartis as a Patient Safety Associate in the Pharmacovigilance (Patient Safety) department. The workshop was designed to assist students in better career decision-making by identifying their potential and also highlighted new career pathways for students. The second lecture was arranged on 'Key to Ace Your Professional Career' on 14th April 2022. Our alumni Dr. Qasim was the guest speaker who is currently working in GSK as an Assistant Manager. The students were given insights on career path selection after Pharm D, how to approach the

recruiters and how to identify their potential. The audience were also updated on the current pharmaceutical business market to promote entrepreneurship.

Community and Welfare Society arranged a Rashan and an Iftar Drive during the holy month of Ramazan, for the underprivileged people of our society. The students enthusiastically participated in collecting the funds, packaging, and distributing the bags. They also arranged iftar on two days where over 50 people were fed each day.

Leisure Club organized the Fresher's Party on 4th June 2022 for the newly enrolled students of ZFP. The event was arranged for the students to unwind after their exams where they enthusiastically took part in singing songs, performing skits and recitals.

ARTICLES

MEDITERRANEAN DIET

DR. FARHANA TASLEEM, DEPT OF PHARMACOGNOSY, FACULTY OF PHARMACY, ZIAUDDIN UNIVERSITY

The Mediterranean Diet (Med Diet) is based on functional foods and Nutraceuticals that people have eaten in countries bordering the Mediterranean Sea, including France, Spain, Greece and Italy. The Med Diet has exploded in popularity over the past few years. This is not just because it evokes feeling like you are dining on a Greek island or at an Italian villa overlooking the Mediterranean Sea, it also because following this diet has been linked to countless health benefits and is a sustainable and delicious way of eating. One promising factor about the Med Diet is that it is not really a diet in the traditional sense rather it is a lifestyle that imitates the way of people living in the Mediterranean region where meals are enjoyed in the company of others, food isn't wolfed down in a drive-through parking lot and physical activity is practiced every day. Nutrient-dense and balanced diet is the name of the game when building Med Diet plate. You won't find pre-packaged, fried, sugary or highly processed foods on Mediterranean plates. Instead, you will find some nutrient-dense dietary all-stars like: fruits, vegetables, herbs, nuts and legumes.

So, question is that why adopt the Med Diet and lifestyle? Various bodily benefits and welfare can be observed after adopting lifestyles similar to those who live by the Mediterranean Sea. One of the most important aspects of this type of diet is the way it improves the beneficial bacteria in the gut. That connection between brain function and gut health is so robust that the gut is sometimes called "the second brain". Signals are sent between the brain and the digestive system and these signals affect various aspects of the body such as

immune response and hormone regulation as well as highlighting some potential mechanisms of action through the gut



microbiota and immune system. Furthermore, it provides a solid dose of fiber, which slows the absorption of the sugar and reduces its impact on blood sugar level. Potential chemical constituents of the Med Diet pattern that appear to have a beneficial role in promoting health include:

Essential Fatty Acids; Omega-3 found in fish.

Monounsaturated Fatty Acids; found in extra virgin olive oil.

Polyphenol; found in whole plant foods such as fruits and vegetables.

Abundance of **Vitamins;** which have

more-than-additive benefits due to food synergy.

High fiber; known to improve the presence of beneficial bacteria in the gut. According to a recent systematic review and meta-analysis compelling evidence linked the components of Mediterranean-style diet to reduce oxidative stress and risk of cognitive impairment, reversal of the impact of excess inflammation, depressive symptoms, disturbances in neuroendocrine function, leaky gut, monoamine activity and overall brain function. Fiber-rich plant foods in a Mediterranean-style of eating promote the growth of beneficial bacteria that modulate the immune system to create an anti-inflammatory response. Other studies suggest that greater adherence to the Med Diet is associated with slower cognitive decline and a lower risk of developing Alzheimer's disease.

Hence it can be concluded that our diet should consist of higher intake of fruits, vegetables, different plant-based foods and other bioactive compounds that could help to reduce risk of cognitive decline related to aging. Emphasis should be laid on fruits, vegetables, whole grains, potatoes, fish/seafood, beans/legumes, nuts, seeds, herbs, spices, avocados, and extra virgin olive oil.

Poultry, eggs, cheese and yogurt should be thoroughly enjoyed whereas red meat, processed meat, sugar-sweetened beverages, added sugars, refined grains, refined oils, and other highly processed foods should be eaten less. Fruits should be enjoyed as desserts. It is essential not only to cook but also to share meals with others. Try to minimize stress levels and don't count calories or track macros.



ARTICLES

THE ROLE OF COMMUNITY PHARMACIST IN THE MANAGEMENT OF MENTAL DISORDER

NABEEL AHMED SIDDIQUI, FINAL YEAR, FACULTY OF PHARMACY, ZIAUDDIN UNIVERSITY

The mental health of a patient is as important as the physical health. The physical health self-easement is performed by the brain but in the case of a mental disorder, the person is unable to self-assess the sign and symptoms. In the Era of 2022, the number of mental disorder patients are increasing rapidly. According to WHO, since 2017 there has been a 13% increase in the cases of mental disorder patients. In this regard, the pharmacist can play an important role in our community for the management and awareness of mental disorders. Patients with mental-health conditions typically have low adherence rates to their psychiatric medications. Reports of patients on antidepressant therapy have shown nonadherence rates as high as 56% whereas patients with schizophrenia and bipolar disorder have reported nonadherence rates up to 61% and 60% respectively. Nonadherence can manifest as patients fail to fill initial prescriptions, adjust their dosing regimens and discontinue medications entirely due to side effects or self-administration of medications. Reasons behind these nonadherence issues may include patients' beliefs about the medication, side effects they may have experienced or the cost of their medications. Another important factor may include the fear of the social stigma of being diagnosed with a mental disorder and not recognizing the signs and symptoms. Most the patients

with the mental disorder remain undiagnosed due to the fear of being judged, being affected by social stigma and most importantly the inability of health care professionals to observe the signs of change in the behavior.

Studies have

therapeutic effects. Pharmacists can also educate patients on the common side effects or unpleasant effects that they may experience and advise them on when they should contact their doctor. A pharmacist can also increase adherence through follow-up calls. The follow-up calls enable the pharmacist to check for signs and symptoms related to drug and also provides an opportunity to observe the behavior of the patient.

Pharmacists are the first healthcare providers to notice mental disorders through basic observation because people visit their pharmacies regularly. In addition to screening for depression, pharmacists can pay special attention to their patient's mood changes or other indications and symptoms of mental illness. Pharmacists might refer their patients to the concerned healthcare providers based on their observations and screening results. Since pharmacists are accessible and generally trusted by the

public, they can play an important role in screening patients for depression by offering screening tools at their pharmacies. Some validated depression-screening tools that are in use include the Patient Health Questionnaire (PHQ), Well-Being Index, Beck Depression Inventory, and the Hamilton Depression Rating Scale.

shown community pharmacists to improve medication adherence in patients through medication education and monitoring of side effects. Education about mental-health drugs can assist in reducing certain prejudices that a patient may have before filling the first prescription. During initial consultations, pharmacists should discuss what the drug is intended for, how to use it properly and how long it may take to get full

