

multiple myeloma -

# A guide to nutrition for patients with multiple myeloma

This guide provides practical advice and information to help you make informed choices about your diet and manage your symptoms effectively



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### Introduction

Multiple myeloma is a type of cancer that affects plasma cells, a type of white blood cell in your bone marrow. These plasma cells are an important part of your immune system, helping your body fight infection [1]. In multiple myeloma, these cells become cancerous and multiply uncontrollably, crowding out healthy blood cells. This can lead to a variety of symptoms, including fatigue, bone pain, and increased risk of infections [1].

A well-balanced diet can play a crucial role in managing symptoms and supporting overall health. This comprehensive guide provides practical advice and information to help you make informed choices about your diet and manage your symptoms effectively.

By following these guidelines and working closely with your healthcare team, you can optimize your nutrition, enhance your well-being, and live a fulfilling life with MM.

### Understanding multiple myeloma and its impact on nutrition

Multiple myeloma and its treatments can affect your body's nutritional needs and how your body processes nutrients. Some common challenges include:

- Changes in appetite: You may experience a loss of appetite or feel full quickly due to the disease itself or treatment side effects like nausea and vomiting [1].
- Changes in taste and smell: Some treatments can alter your sense of taste and smell, making food less appealing [6].
- **Difficulty chewing or swallowing**: Mouth sores or other complications can make it difficult to eat [1].
- **Digestive issues:** Multiple myeloma can affect your digestive system, leading to problems like constipation or diarrhea [1].
- **Weight changes:** Treatment for multiple myeloma can cause fluctuations in your weight, leading to either weight gain or weight loss [6].
- **Kidney problems:** Multiple myeloma can damage your kidneys, requiring dietary adjustments to protect them [8].
- **Anemia:** Multiple myeloma can cause anemia, a condition where you have a low red blood cell count. This can lead to fatigue and weakness [8].
- Weakened immune system: Multiple myeloma and its treatments can weaken your immune system, making you susceptible to infections [1].

• **Bone health:** Multiple myeloma can weaken your bones, increasing the risk of fractures [9].

It's important to be aware of these challenges and work with your healthcare team to address them effectively.

# General dietary guidelines for people with multiple myeloma

While there is no one-size-fits-all diet for multiple myeloma patients, here are some general guidelines to follow:

- **Maintain a healthy weight:** Aim to maintain a healthy weight throughout your treatment. Avoid excessive weight gain or loss [12].
- **Eat a balanced diet:** Focus on a balanced diet that includes a variety of foods from all food groups [3]. This means getting enough protein, carbohydrates, healthy fats, vitamins, and minerals.
- Prioritize plant-based foods: Fill your plate with plenty of fruits, vegetables, and whole grains. These foods are rich in vitamins, minerals, and antioxidants that can support your overall health [1].
- Choose lean protein sources: Include lean protein sources like fish, poultry, beans, lentils, and tofu in your diet. Protein is essential for maintaining muscle mass and immune function. However, patients with kidney impairment may need to adjust protein intake based on their healthcare provider's recommendations. Consult your doctor or dietitian to determine the right balance for you [13].
- Limit red and processed meats: Reduce your intake of red meat (beef, pork, lamb) and avoid processed meats (bacon, sausage, hot dogs) [12]. These meats have been linked to an increased risk of certain cancers.
- Choose healthy fats: Include healthy fats like olive oil, avocados, nuts, and seeds in your diet [2]. These fats are important for heart health and overall well-being.

- **Limit added sugars:** Reduce your intake of sugary drinks and processed foods high in added sugar [2]. These foods provide empty calories and can contribute to weight gain and other health problems.
- **Stay hydrated:** Drink plenty of fluids throughout the day, especially water [1]. Staying hydrated is important for overall health and can help manage some treatment side effects.
- Practice good food safety: Wash your hands thoroughly before handling food, wash fruits and vegetables before eating, and cook meats, eggs, and fish to the recommended internal temperatures [1].
  This is especially important for people with weakened immune systems, as multiple myeloma and its treatments can make you more susceptible to infections.

### Managing treatment side effects with diet

Multiple myeloma treatments can cause a range of side effects that may affect your ability to eat and enjoy food. Here are some dietary strategies to help manage common side effects:

#### Nausea and vomiting

- **Eat small, frequent meals:** Instead of three large meals, try eating smaller portions more frequently throughout the day [1].
- Choose bland foods: Opt for foods that are easy on your stomach, such as toast, crackers, plain yogurt, and cooked vegetables [13].
- **Avoid strong odors:** Steer clear of foods with strong smells that might trigger nausea.
- **Stay hydrated:** Sip on clear liquids like water, broth, or ginger ale throughout the day.
- Try ginger: Ginger can help soothe nausea. Try ginger ale, ginger tea, or candied ginger.

#### Constipation

- **Increase fiber intake:** Include plenty of high-fiber foods in your diet, such as whole grains, fruits, vegetables, nuts, and beans [1].
- **Drink plenty of fluids:** Staying hydrated is crucial for preventing and managing constipation.

• **Get regular exercise:** Physical activity can help stimulate bowel movements.

#### Diarrhea

- **Stay hydrated:** Drink plenty of fluids to replace those lost through diarrhea.
- Follow the BRAT diet: The BRAT diet (bananas, rice, applesauce, toast) can help firm up stools [1].
- **Avoid high-fiber foods:** Temporarily limit high-fiber foods like raw fruits and vegetables, whole grains, and beans.
- Limit caffeine and alcohol: These substances can worsen diarrhea.

#### Mouth sores

- Choose soft foods: Opt for foods that are easy to swallow, such as mashed potatoes, yogurt, pudding, and soups [1].
- Avoid acidic and spicy foods: These can irritate mouth sores.
- Rinse your mouth with salt water: This can help soothe and cleanse mouth sores.

# Specific nutritional needs for multiple myeloma patients

In addition to the general guidelines, people with multiple myeloma may have specific nutritional needs:

#### Protein

Protein is crucial for maintaining muscle mass and strength, which can be affected by multiple myeloma and its treatments. Aim to include a source of lean protein with every meal and snack [15].

Good sources of protein include:

- Lean meats (chicken, fish, turkey)
- Eggs
- Low-fat dairy products (milk, yogurt, cheese) or dairy substitutes
- Nuts and nut butters
- Beans
- Soy foods (tofu, tempeh) [15]

#### Calcium and vitamin D

Multiple myeloma can weaken your bones, increasing the risk of fractures. Calcium and vitamin D are essential for maintaining bone health [9].

Good sources of calcium include:

- Dairy products (milk, yogurt, cheese)
- Leafy green vegetables (kale, spinach, collard greens)
- Fortified foods (orange juice, cereal)

#### Good sources of vitamin D include:

- Sunlight
- Fatty fish (salmon, tuna, mackerel)
- Egg yolks
- Fortified foods (milk, cereal) [9].

#### Iron and anemia Management

Multiple myeloma can cause anemia, a condition characterized by a low red blood cell count. Anemia can lead to fatigue, weakness, and shortness of breath [8]. Iron is essential for producing red blood cells, and if you have anemia, your doctor may recommend that you eat more iron-rich foods or take iron supplements [8].

#### Good sources of iron include:

- Lean red meat
- Raisins
- Bell peppers
- Kale
- Brussels sprouts
- Sweet potatoes
- Broccoli
- Tropical fruits (mango, papaya, pineapple, guava) [8]

#### Kidney-friendly diet

Some multiple myeloma patients experience kidney damage. Dietary adjustments may include:

- Reducing sodium Limit processed and packaged foods.
- Monitoring protein intake Adjust based on kidney function.

- Limiting phosphorus Found in dairy, processed meats, and dark sodas.
- Watching potassium levels Balance intake of potatoes, bananas, and tomatoes if kidney function is impaired.

It's crucial to work closely with your doctor and a registered dietitian to develop a kidney-friendly meal plan that meets your individual needs.

#### Other nutrients

Multiple myeloma patients may also benefit from other nutrients, such as:

• **Fiber:** Some chemotherapy drugs can cause constipation. Increasing your fiber intake and drinking plenty of water can help. Good sources of fiber include whole grains, fruits, vegetables, nuts, and beans [1].

# Practical advice and meal Planning tips for multiple myeloma patients

Here are some practical tips to help you manage your diet and maintain good nutrition:

- Eat small, frequent meals: If you have a poor appetite or experience nausea, try eating smaller, more frequent meals throughout the day instead of three large meals [1].
- Choose foods that are easy on your stomach: If you experience nausea or digestive issues, choose bland foods that are easy to digest [1].
- **Keep snacks handy:** Keep nutritious snacks on hand for when you get hungry [1]. Good snack options include fruits, vegetables, nuts, yogurt, and whole-grain crackers.
- **Try meal replacement shakes:** If you have trouble eating solid foods, consider meal replacement shakes to ensure you're getting enough calories and nutrients [1].
- **Make cooking easier:** Prepare meals in advance and freeze them in meal-sized portions. Consider using a slow cooker or other appliances to simplify cooking [19].
- Focus on foods that appeal to you: Choose foods that you enjoy and that sound good to you, even if they're not the healthiest options. It's important to eat something rather than nothing [13].
- Adjust your diet as needed: Your nutritional needs and preferences may change throughout your treatment. Be flexible and adjust your diet as needed [19].

 High-calorie foods: If you need to increase your calorie intake due to weight loss, consider adding nutrient-dense foods such as healthy fats (avocados, nuts, olive oil), lean proteins, and whole grains. However, for patients on steroid treatments, be mindful of weight gain and monitor portion sizes.

#### 7-day sample meal plan

#### Day 1

- Breakfast: Scrambled eggs with spinach and feta, whole wheat toast, herbal tea
- **Snack:** Greek yogurt with flaxseeds and blueberries
- Lunch: Grilled salmon with quinoa and roasted carrots
- **Snack:** Hummus with cucumber and whole wheat crackers
- **Dinner:** Lentil soup with whole-grain bread and a side of steamed broccoli

#### Notes:

- For kidney issues: Swap quinoa for white rice to lower phosphorus.
- For nausea: Choose plain toast & scrambled eggs instead of a full meal.

#### Day 2

- Breakfast: Overnight oats with almond milk, chia seeds, and diced pears
- Snack: Handful of almonds with a banana
- Lunch: Baked chicken breast with roasted zucchini & mashed sweet potatoes
- Snack: Low-fat cottage cheese with strawberries
- Dinner: Brown rice stir-fry with tofu, bell peppers, and olive oil

#### **Notes:**

- For kidney issues: Reduce potassium intake by swapping sweet potatoes for white rice.
- For blood sugar balance: Replace banana with half an apple if needed.

#### Day 3

- Breakfast: Whole grain toast with almond butter and sliced apples
- Snack: Hard-boiled egg with a handful of walnuts
- Lunch: Grilled fish tacos with cabbage slaw and avocado (whole wheat tortilla)
- Snack: Carrot sticks with guacamole

• **Dinner:** Quinoa and chickpea salad with roasted cauliflower

#### **Notes:**

- For kidney health: Swap chickpeas with white beans to lower phosphorus.
- For mouth sores: Avoid citrus (use softer vegetables in tacos).

#### Day 4

- Breakfast: Scrambled tofu with mushrooms and whole wheat toast
- Snack: Handful of pumpkin seeds and a small orange
- Lunch: Turkey and avocado wrap with a side of mixed greens
- **Snack:** Greek yogurt with ground flaxseeds and honey
- Dinner: Baked cod with steamed green beans and wild rice

#### Notes:

- For kidney issues: Limit avocado to ¼ portion or swap with olive oil.
- For fatigue: This meal plan includes iron-rich pumpkin seeds & turkey.

#### Day 5

- Breakfast: Smoothie with spinach, berries, protein powder, and almond milk
- Snack: Whole wheat crackers with peanut butter
- Lunch: Lentil and vegetable soup with whole wheat bread
- Snack: Cottage cheese with chopped walnuts
- **Dinner:** Grilled shrimp with quinoa and roasted asparagus

#### Notes:

- For kidney issues: Swap quinoa for white rice & asparagus for zucchini to lower phosphorus.
- For diarrhea: Remove high-fiber lentils; replace with chicken soup.

#### Day 6

- **Breakfast:** Scrambled eggs with tomatoes and goat cheese, whole wheat toast
- Snack: Small handful of cashews and a pear
- Lunch: Chickpea and cucumber salad with olive oil dressing
- Snack: Plain yogurt with cinnamon and sliced almonds

• Dinner: Grilled chicken with mashed cauliflower and sautéed kale

#### Notes:

- For kidney issues: Limit kale portion or swap for lettuce.
- For steroid use: Keep high-fiber snacks to stabilize blood sugar.

#### Day 7

- Breakfast: Whole grain pancakes with almond butter and blueberries
- Snack: Carrots with hummus
- Lunch: Tuna salad on whole-grain bread with a side of cherry tomatoes
- **Snack:** Boiled egg and walnuts
- **Dinner:** Brown rice with baked tofu and roasted bell peppers

#### **Notes:**

- For kidney issues: Swap brown rice for white rice to lower phosphorus.
- For mouth sores: Avoid tomatoes; replace with cucumbers.

#### Additional Meal Adjustments for Specific Symptoms

- **Mouth Sores:** Choose soft foods (yogurt, mashed potatoes, soups). Avoid spicy, acidic, or crunchy foods.
- Nausea: Stick to plain, mild foods (crackers, plain rice, banana). Avoid greasy or strong-smelling foods.
- **Diarrhea:** Follow the low-fiber BRAT diet (bananas, rice, applesauce, toast). Avoid high-fiber and greasy foods.
- **Constipation:** Increase fiber-rich foods (chia seeds, whole grains, beans, leafy greens). Stay hydrated.
- **Kidney Issues:** Reduce high-phosphorus & potassium foods (limit dairy, bananas, tomatoes, nuts).

#### Recipes

#### **Honey Chicken and Broccoli Stir-Fry**

This recipe is a great source of protein and provides a balanced meal with lean chicken, broccoli, and edamame.

#### Ingredients:

- 2 cups broccoli florets
- 1 red pepper, cored and thinly sliced
- 1 teaspoon minced garlic
- 2 tablespoons egg whites plus 1 tablespoon water

- 1/3 cup cornstarch
- 3 tablespoons olive oil
- 11/2 pounds boneless, skinless chicken breasts, cut into chunks or strips
- 1 cup edamame
- 1/4 cup honey
- 1-2 tablespoons low-sodium soy sauce
- Salt and pepper to taste

#### **Instructions:**

- 1. In a large nonstick pan coated with nonstick cooking spray, add broccoli, red pepper, and garlic. Sauté for about 5 minutes; set aside.
- 2. In two shallow bowls, put egg whites with water in one and cornstarch in the other. In the same pan, heat olive oil.
- 3. When the skillet is hot, dip chicken pieces in egg whites and then lightly dredge in cornstarch. Add to the pan and brown for 2-3 minutes, then turn and continue cooking and stirring until chicken is browned and done, 5-7 minutes.
- 4. Add the reserved broccoli and edamame to the pan with the chicken.
- 5. Add honey and soy sauce to the pan; stir to coat.
- 6. Add salt and pepper to taste.
- 7. Serve over brown rice or quinoa.

#### **Plant-Based Recipe: Rajas Con Crema**

This plant-based recipe is a delicious and healthy option for multiple myeloma patients. It's rich in vegetables and provides a good source of protein from cashews.

#### **Ingredients:**

- 4-5 poblano peppers
- 2 tbsp avocado oil
- 1 yellow or white onion, thinly sliced
- 4 cloves garlic, minced
- 2 cups frozen corn
- 1 cup raw cashews
- 11/2 cup plain unsweetened almond milk (or any plant milk)
- Juice of 1 lemon
- 1tsp salt
- 1 tsp garlic powder
- 1/4 tsp ground nutmeg (optional)

#### Instructions:

- 1. In a bowl, add raw cashews and cover with hot water. Let sit for 20 minutes, then strain.
- 2. **Roast poblano peppers:** Either roast them on an open flame, rotating to ensure they are evenly charred, or preheat the oven to 500 degrees F (260 degrees C), line a baking sheet with aluminum foil, and add poblano peppers. Roast in the preheated oven for 20 minutes; flip and continue roasting until the skin is charred and the flesh is soft, about 20 minutes more.
- 3. **Steam peppers:** Place roasted peppers in a bowl and cover each with a wet paper towel. Then cover the bowl with plastic wrap and let

steam for 10 minutes. Carefully remove the plastic wrap, peel the skins from the peppers, and remove seeds and stems. Cut peppers into strips.

- 4. Cook onion and garlic: Heat 2 tbsp oil in a saucepan over medium heat. Cook and stir onion until soft, 5 to 10 minutes, then add garlic.
- 5. **Add peppers and corn:** Add poblano pepper strips and corn; season with salt and pepper, then cook for 5-7 minutes. Reduce heat to medium-low.
- 6. **Make cashew cream:** In a blender, combine soaked raw cashews, almond milk, juice of 1 lemon, salt, garlic powder, and ground nutmeg (if using). Blend on high until smooth.
- 7. **Combine and simmer:** Stir in cashew mixture and keep on simmer for about 5 minutes. Taste and adjust seasonings as needed, adding salt and pepper.

# Importance of working with a healthcare professional

It's essential to work with a registered dietitian or other healthcare professional for personalized nutrition guidance. They can help you:

- Assess your individual nutritional needs.
- Develop a personalized meal plan.
- Manage treatment side effects that affect your eating.
- Monitor your nutritional status and make adjustments as needed.
- Provide education and support [22].
- Reduce the risk of treatment toxicity [4].

Every multiple myeloma patient has unique dietary needs depending on their treatment, kidney function, weight changes, and overall health. A registered dietitian specializing in oncology nutrition is essential to help you develop a personalized meal plan. Do not make major dietary changes without consulting your healthcare team.

### Conclusion

Living with multiple myeloma presents nutritional challenges, but a well-planned diet can support treatment, improve quality of life, and help manage symptoms. By following evidence-based guidelines, working with healthcare professionals, and making adjustments as needed, patients can take an active role in their health and well-being. Always consult your doctor before making any major dietary changes, particularly regarding supplements or kidney-related dietary restrictions.

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