



Bitter Gourd Recipes for Tanzania



AVRDC

The World Vegetable Center





AVRDC – The World Vegetable Center is an international nonprofit institute committed to alleviating poverty and malnutrition through the increased production and consumption of nutritious, health-promoting vegetables. The Center's improved vegetable lines and technologies help small-scale farmers boost yields, increase their incomes, and safely grow nutritious vegetables for their families and communities.

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Bitter Gourd Recipes for Tanzania

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Introduction

Diabetes currently affects 285 million adults worldwide and the number is growing. Africa alone will double its diabetic population in the next 16 years (Shaw et al., 2010). India and China currently have the largest diabetic populations in the world. It is estimated that up to 80% of coronary heart diseases and 90% of type 2 diabetes could be prevented through healthier lifestyles (Boutayeb and Boutayeb, 2005). As diabetes care and access to low-cost and readily available treatment such as insulin and blood glucose monitoring are limited in these countries, it is important to find food-based approaches to diabetes prevention and management. Two of the most effective and practical means for preventing and treating diabetes are dietary management and physical activity (Esposito et al., 2010).

In 2011, AVRDC-The World Vegetable Center, Justus-Liebig University, Geissen (Germany), Avinashilingam University for Women (India), Punjab Agricultural University (India), Kilimanjaro Christian Medical Centre (Tanzania), and National Taiwan University (Taiwan) initiated a project entitled, “A better bitter gourd: Exploiting bitter gourd (*Momordica charantia* L.) to increase incomes, manage type 2 diabetes, and promote health in developing countries”. Funded by the Federal Ministry for Economic Cooperation and Development, Germany (BMZ), the project studied the potential of bitter gourd in the prevention and management of type 2 diabetes.

Bitter gourd (*Momordica charantia* L.) is a popular vegetable in Asia traditionally used as a treatment for many illnesses, particularly diabetes. High in vitamin C and fiber, bitter gourd contains insulin-like compounds and acts through different mechanisms in the body to lower blood glucose levels. Bitter gourd is sometimes called “plant insulin” due to its efficacy for glucose management. As a food-based treatment for diabetes, bitter gourd can become an easily accessible and low-cost alternative to insulin and medicinal drugs.

As lifestyle and eating habits in Tanzania have been changing in recent decades, cases of type 2 diabetes have been increasing at a fast pace. The project aimed to research the antidiabetic properties of bitter gourd to help improve the quality of life of diabetics and to promote healthy eating for the general population.

Dietary management is an essential component of managing diabetes. The project worked with nutrition experts from Avinashilingam University for Women in Coimbatore, India and Kilimanjaro Christian Medical Centre in Moshi, Tanzania to develop healthy and nutritious bitter gourd recipes designed to suit local food

preparation methods, ingredients, materials and taste. The recipes have been modified for reduced sugar, salt, and oil content, and cooking time. Each dish has been carefully planned and taste-tested to ensure these easy-to-prepare dishes will delight the palates of everyone in your family. From soups to main dishes, appetizers to snacks, there is a recipe suitable for you.

This recipe book was developed to promote the usage of bitter gourd in Tanzanian cuisine. The recipes follow healthy dietary guidelines and incorporate bitter gourd in everyday dishes. However, the recipes are not meant for diabetic patients under treatment. Certain recipes need to be modified to accommodate the special dietary guidelines for diabetics. Recommendations on the usage of bitter gourd for diabetics will be made available.

On that note, we hope you will enjoy cooking from this healthy recipe book and share these delicious dishes with family and friends.

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Words from Gloria Damian

Bitter gourd, a nutritious vegetable that tastes slightly bitter when compared to some bitter Tanzanian vegetables, is gaining popularity around the world due to its antidiabetic and nutritional values.

When I first became aware of bitter gourd, I wondered how bitter it would taste. After sampling these delicious recipes, I realized bitter gourd is an interesting vegetable that is worth including in your meals.

The recipes are designed so that bitter gourd is cooked for less than 15 minutes and in a minimum amount of water to allow maximum nutrient retention and a better taste. When bitter gourd is eaten raw, such as in salad or juice, it provides the most nutrients; however, a variety of healthy cooking methods are used to give a wider range of choices for including bitter gourd in meals.

Most importantly, the starchy dishes recommended to eat along with bitter gourd should be from whole grains. Refined starches such as pasta or highly milled flour dishes should be avoided, especially when preparing meals for diabetics.

These typical Tanzanian dishes have been modified to accommodate bitter gourd for healthier meals. Enjoy!



Gloria Damian
Dietician, Kilimanjaro Christian Medical Centre

Guide to Nutritional Information

Nutritional information for each recipe is included to help you understand the nutritional value of your meal. Following the labeling criteria developed by the U.S. Food and Drug Administration (FDA), the Daily Value is based on an intake of 2,000 calories for adults as a standard reference. For those who eat more or less than 2,000 calories a day, the requirement will be higher or lower. The % Daily Value illustrates the percentage of daily nutrient requirement met by the recipe. It includes both the DRV (Dietary Reference Values) and RDI (Reference Dietary Intakes). Daily Value is an expression similar to DRI (Dietary Reference Intake) and RDA (Recommended Dietary Allowance).

The reference Daily Values based on an intake of 2,000 calories for adults:

Food Component	Daily Value (DV)
Total Fat	65 g
Saturated Fat	20 g
Cholesterol	300 mg
Total Carbohydrate	300 g
Dietary Fiber	25 g
Protein	50 g
Vitamin A	500 µg RE
Vitamin C	60 mg
Vitamin D	400 IU
Vitamin E	30 IU
Vitamin K	80 µg
Thiamine	1.5 mg
Riboflavin	1.7 mg
Niacin	20 mg
Vitamin B6	2 mg
Folate	400 µg
Vitamin B12	6 µg
Biotin	300 µg
Pantothenic acid	10 mg
Calcium	1,000 mg
Iron	18 mg
Sodium	2,400 mg
Potassium	3,500 mg
Phosphorus	1,000 mg
Iodine	150 µg
Magnesium	400 mg
Zinc	15 mg
Selenium	70 µg
Copper	2 mg
Manganese	2 mg
Chromium	120 µg
Molybdenum	75 µg
Chloride	3,400 mg

The nutrient content of the recipes is calculated for each serving. Micronutrients higher than 8% Daily Value are highlighted in the nutritional information. Recommended daily nutrient requirements are provided at the end of the book for different age groups and gender.

RECIPES

Precautions

Consumption of high quantities of bitter gourd may not be suitable for:

- * People with low blood glucose levels (hypoglycemia)
- * Pregnant and lactating mothers
- * Young children
- * Diabetes patients on oral drug treatment

Bitter gourd should not be consumed on an empty stomach.

Bitter Gourd Juice

~ A nutritious drink, especially for diabetics ~

3 Servings

Preparation time: 5 minutes

Ingredients

1 large (300 g) bitter melon with seeds, chopped in cubes
1/2 L drinking water

Method

1. In a blender, add bitter melon cubes and drinking water. Blend until smooth.
2. Sieve and serve chilled.

Lime juice can be added to reduce the bitter taste.

Nutritional Information (per serving)

Calories	6	kcal	
			% Daily Value*
Total fat	0	g	0%
Saturated fat	0	g	0%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	4	mg	3%
Total Carbohydrate	1	g	0%
Dietary Fiber	1	g	4%
Sugars	3	g	
Protein	0	g	

Micronutrient Highlights

Vitamin C 31.5 mg 52%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Ginger Juice

~ A tasty juice high in Vitamin C and other micronutrients ~

4 Servings

Preparation time: 10 minutes

Ingredients

- 1 (250 g) bitter melon cut in cubes (with seeds)
- 1 (250 g) ripe mango cut in cubes
- Lime juice from 1 fruit
- 1 cm root ginger, chopped (optional)
- 1/2 L drinking water

Method

1. Combine bitter melon, mango, lime juice, ginger and water in a blender. Blend until smooth.
2. Sieve and serve chilled.

Nutritional Information (per serving)

Calories	56	kcal	
			% Daily Value*
Total fat	0	g	0%
Saturated fat	0	g	0%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	10	mg	0%
Total Carbohydrate	14	g	5%
Dietary Fiber	3	g	12%
Sugars	9	g	
Protein	1	g	

Micronutrient Highlights

Vitamin A	78	µg RE	16%
Vitamin C	73.3	mg	122%
Folate	55.1	µg	14%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Pineapple Juice

~ A refreshing, naturally sweet drink high in antioxidants ~

4 Servings

Preparation time: 10 minutes

Ingredients

- 1 (250 g) bitter gourd, chopped with seeds
- 1/2 (250 g) pineapple, chopped
- 1/2 L water

Method

1. Combine bitter gourd, pineapple and water in a blender. Blend until smooth.
2. Sieve and serve chilled.

Nutritional Information (per serving)

Calories	42	kcal	
		% Daily Value*	
Total fat	0	g	0%
Saturated fat	0	g	0%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	9	mg	0%
Total Carbohydrate	11	g	4%
Dietary Fiber	3	g	11%
Sugars	6	g	
Protein	1	g	

Micronutrient Highlights

Vitamin C	82.4	mg	137%
Folate	56.2	µg	14%
Manganese	0.6	mg	32%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Salad

~ An appetizing and rich salad ~

4 Servings

Preparation time: 10 minutes

Ingredients

- 1 (250 g) bitter gourd, sliced thinly
- 1 (50 g) carrot, grated
- 1 (50 g) tomato, sliced
- 1/2 (50 g) onion, chopped
- Lemon juice from 1 lemon
- 1 chili, chopped (optional)
- 1 L water (for soaking)
- Salt to taste

Method

1. Add salt to 1 liter of water. Soak slices of bitter gourd in the salt water for 30 minutes then squeeze the water out.
2. In a large bowl, combine all the vegetables and add lemon juice.
3. Sprinkle some black pepper for a better taste, toss and serve immediately as side dish.

Nutritional Information (per serving)

Calories	26	kcal	
			% Daily Value*
Total fat	0	g	0%
Saturated fat	0	g	0%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	37	mg	0%
Total Carbohydrate	6	g	2%
Dietary Fiber	3	g	10%
Sugars	2	g	
Protein	1	g	

Micronutrient Highlights

Vitamin A	246	µg RE	50%
Vitamin C	61.2	mg	102%
Folate	53.2	µg	13%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd in Banana and Meat Broth

~ Typical Tanzanian delight with bitter gourd for more nutrients ~

6 Servings

Preparation time: 20 minutes

Ingredients

- 1/4 kg beef with bone
- 1/4 tsp crushed ginger
- 1 whole chili (optional)
- Juice from 1/2 lemon
- 3/4 L water
- 2 tbsp vegetable oil
- 1 (50 g) onion, chopped
- 2 cloves of garlic, crushed
- 1 (50 g) carrot, chopped
- 2 (75 g) tomatoes, chopped
- 2 (250 g) bitter gourds, chopped (without seeds)
- 5 green bananas
- Salt to taste

Method

1. Cut the meat in pieces and marinate with ginger and lemon.
2. Add a pinch of salt and let it sit for 10 minutes.
3. Add 3/4 liter water and whole chili to a cooking pot and bring to a boil. Add the marinated meat and boil for 10 to 15 minutes (use a pressure cooker for best results).
4. In a medium sized pan, heat the oil to fry the onions, then add garlic and carrots. Cook until brown.
5. Add tomatoes and a pinch of salt. Cover the pan with a lid and let it cook until the vegetables are soft (2 to 3 minutes).
6. Add the plantain and bitter gourd pieces then add broth from the boiled meat. Simmer for 10 minutes until the plantains and bitter gourds are soft.
7. Add the meat pieces and mix well. Serve hot with steamed vegetables.

Irish potatoes or yams can be used instead of bananas.

Nutritional Information (per serving)			
Calories	235	kcal	
		% Daily Value*	
Total fat	7	g	11%
Saturated fat	1	g	7%
Trans Fat	0	g	
Cholesterol	24	mg	8%
Sodium	281	mg	12%
Total Carbohydrate	5	g	2%
Dietary Fiber	1	g	5%
Sugars	1	g	
Protein	15	g	
Micronutrient Highlights			
Vitamin A	157	µg RE	31%
Vitamin C	12.6	mg	21%
Niacin	3.1	mg	16%
Vitamin B6	1.0	mg	51%
Vitamin B12	1.0	µg	17%
Magnesium	43.8	mg	11%
Phosphorus	104	mg	10%
Potassium	534	mg	15%
Zinc	3.6	mg	24%
Selenium	14.6	µg	21%
*Percent Daily Values are based on a 2000 calorie diet.			
Your daily values may be higher or lower depending on your caloric needs.			



Bitter Gourd in Coconut Milk

~ Serve hot with ugali and steamed vegetables for a tasty meal ~

3 Servings

Preparation time: 15 minutes

Ingredients

2 tbsp vegetable oil
1 (50 g) medium sized onion, chopped
1/4 tsp ginger, crushed
1 (50 g) medium sized carrot, chopped
2 (75 g) tomato, chopped
1 (200 g) bitter gourd, chopped
3 (50 g) okra, chopped
1 cup coconut milk
1/2 cup of warm water
Salt to taste

Method

1. In a medium sized pot, heat oil and fry onions until brown then add carrots and ginger. Flip constantly.
2. Add the tomatoes and place the lid on the pot (for 3 minutes) to let tomatoes soften.
3. Add okra and bitter gourd, mix them well then add 1/2 cup warm water and simmer for 5 minutes.
4. Add coconut milk and let it thicken for 5 minutes. Serve hot.

Nutritional Information (per serving)

Calories	278	kcal	
		% Daily Value*	
Total fat	26	g	40%
Saturated fat	15	g	76%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	528	mg	22%
Total Carbohydrate	12	g	4%
Dietary Fiber	3	g	12%
Sugars	3	g	
Protein	3	g	
Micronutrient Highlights			
Vitamin A	313	µg RE	63%
Vitamin C	31.5	mg	53%
Vitamin K	18.7	µg	23%
Folate	59.9	µg	15%
Iron	3.2	mg	18%
Magnesium	59.2	mg	15%
Phosphorus	122	mg	12%
Potassium	528	mg	15%
Copper	0.2	mg	12%
Manganese	0.8	mg	39%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Mutton Soup

~ A complete breakfast dish ~

4 Servings

Preparation time: 20 minutes

Ingredients

1/4 kg mutton with bone, chopped
3/4 L water
1 bitter gourd (100 g), chopped
1 (50 g) carrot chopped in cubes
1 (50 g) onion
1 chili pepper
Salt to taste

Method

1. In a cooking pot, boil meat (with the bone) in 3/4 liter of water. Add salt and a whole chili and continue to boil for 10 to 15 minutes (pressure cooker for best results).
2. When cooked, add the vegetables and boil for 3 minutes.
3. Serve hot with bread or steamed bananas.

Nutritional Information (per serving)

Calories	108	kcal	
		% Daily Value*	
Total fat	2	g	3%
Saturated fat	1	g	3%
Trans Fat	0	g	
Cholesterol	47	mg	16%
Sodium	362	mg	15%
Total Carbohydrate	4	g	1%
Dietary Fiber	1	g	5%
Sugars	2	g	
Protein	18	g	
Micronutrient Highlights			
Vitamin A	227	µg RE	45%
Vitamin C	25.5	mg	43%
Riboflavin	0.4	mg	24%
Niacin	2.7	mg	14%
Vitamin B12	0.7	µg	12%
Iron	2.6	mg	15%
Phosphorus	148	mg	15%
Potassium	419	mg	12%
Zinc	3.6	mg	24%
Copper	0.2	mg	12%
Selenium	7.6	µg	11%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Chicken Pilau

~ A spicy balanced dish to serve with raw salad ~

4 Servings

Preparation time: 20 minutes

Ingredients

2 tbsp vegetable oil
1 (50 g) onion, chopped
1 head garlic, crushed
250 g chicken
1 big Irish potato, chopped
4 tbsp pilau masala
1 cup rice, washed
1 (250 g) bitter melon cut in cubes
3 cups of hot water
Salt to taste

Method

1. In a big pot, heat oil on medium heat. Add onions, cook until transparent then add garlic and keep stirring for 2 minutes.
2. Add meat and potatoes, pilau masala and mix well.
3. Add rice and bitter melon cubes with a pinch of salt, then stir until the water has dried.
4. Add hot water, cover the pot and then let it simmer on low heat until the rice is cooked. Serve hot as a main dish.

Nutritional Information (per serving)

Calories	271	kcal	
			% Daily Value*
Total fat	8	g	13%
Saturated fat	1	g	4%
Trans Fat	0	g	
Cholesterol	6	mg	2%
Sodium	1294	mg	54%
Total Carbohydrate	43	g	14%
Dietary Fiber	3	g	12%
Sugars	1	g	
Protein	6	g	
Micronutrient Highlights			
Vitamin C	10.0	mg	17%
Thiamin	0.2	mg	15%
Niacin	2.7	mg	13%
Vitamin B6	0.3	mg	16%
Folate	58.2	µg	15%
Magnesium	351	mg	10%
Copper	0.2	mg	10%
Manganese	0.5	mg	25%
Selenium	7.5	µg	11%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Rice

~ Warm comfort food served with bean sauce ~

3 Servings

Preparation time: 15 minutes

Ingredients

- 1 cup rice, washed
- 2 cups water
- 1 (100 g) bitter gourd
- 1 (25 g) carrot
- 1 tbsp vegetable oil
- 2 (12 g) cloves garlic
- 1 teaspoon cumin seeds (jeera)
- Salt to taste

Method

1. In a cooking pot, wash the rice and combine all the ingredients.
2. Mix well and bring to a boil.
3. Turn the heat to a low setting when the rice is beginning to dry and let it dry slowly until cooked. Serve hot.

Nutritional Information (per serving)

Calories	194	kcal	
			% Daily Value*
Total fat	5	g	8%
Saturated fat	0	g	2%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	397	mg	15%
Total Carbohydrate	33	g	11%
Dietary Fiber	1	g	6%
Sugars	1	g	
Protein	4	g	
Micronutrient Highlights			
Vitamin A	147	µg RE	29%
Vitamin C	12.4	mg	21%
Thiamin	0.2	mg	13%
Niacin	2.7	mg	14%
Folate	79.3	µg	20%
Iron	1.9	mg	11%
Manganese	0.6	mg	28%
Selenium	8.1	µg	12%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Stew

~ An enjoyable side dish loaded with nutrients ~

4 Servings

Preparation time: 15 minutes

Ingredients

- 1 tbsp vegetable oil
- 1 (50 g) onion, chopped
- 2 (75 g) tomato, chopped
- 1 (50 g) carrot, chopped
- 1 (250 g) small bitter gourd
- 1/2 L warm water
- Salt to taste

Method

1. Heat oil in a pot and fry onions until light brown in color.
2. Add carrots, then tomatoes and salt, and cover for 2-5 minutes to let the vegetables soften.
3. Add bitter gourd slices, mix thoroughly and then add warm water and cook for 10 minutes until stew texture.
4. Serve hot with boiled rice along with vegetables and fruits.

Nutritional Information (per serving)

Calories	66	kcal	
		% Daily Value*	
Total fat	4	g	6%
Saturated fat	0	g	2%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	392	mg	16%
Total Carbohydrate	7	g	2%
Dietary Fiber	2	g	8%
Sugars	2	g	
Protein	1	g	

Micronutrient Highlights

Vitamin A	2325	IU	47%
Vitamin C	25.1	mg	42%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Pan-Fried Mixed Vegetables

~ This delicious and colorful dish serves a variety of nutrients ~

2 Servings

Preparation time: 15 minutes

Ingredients

- 1 tbsp vegetable oil
- 1 (50 g) onion, chopped
- 1 (50 g) carrot, chopped
- 1 (50 g) bitter gourd, chopped
- 1 (50 g) eggplant pieces
- 1 (50 g) small sweet pepper
- 1 (50 g) tomatoes, chopped
- Salt to taste
- A pinch of black pepper

Method

1. In a medium sized pan, heat oil and fry onions, carrots and bitter gourd.
2. Add tomatoes and salt, mix and cover to let it cook.
3. Add a small amount of water and cover the pot until vegetables are thoroughly cooked.
4. Season with black pepper and serve hot as an accompaniment to rice or ugali.

Nutritional Information (per serving)

Calories	120	kcal
		% Daily Value*
Total fat	8	g 12%
Saturated fat	1	g 3%
Trans Fat	0	g
Cholesterol	0	mg 0%
Sodium	480	mg 20%
Total Carbohydrate	13	g 4%
Dietary Fiber	3	g 12%
Sugars	4	g
Protein	2	g

Micronutrient Highlights

Vitamin A	5199	IU	104%
Vitamin C	58.1	mg	97%
Vitamin E	2.0	mg	10%
Vitamin K	11.6	µg	14%
Manganese	0.2	mg	10%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Bitter Gourd Fries

~ A simple and crispy bite for health ~

4 Servings

Preparation time: 10 minutes

Ingredients

- 1 cup vegetable oil
- 1 (250 g) bitter gourd, sliced
- 1 tbsp black pepper (optional)
- Salt to taste

Method

1. In a bowl, mix together bitter gourd with black pepper.
2. Heat oil on a frying pan until hot and add the bitter gourd slices. Cook until brown and crispy.
3. Sieve out the oil and place on a dish with towel/ food paper to absorb the oil.
4. Sprinkle some salt and serve hot with salad or alone as a snack.

Alternative to frying: Apply a little oil on seasoned bitter gourd slices and bake for 8 to 10 minutes in a 150° C oven.

Nutritional Information (per serving)

Calories	76	kcal	
			% Daily Value*
Total fat	7	g	11%
Saturated fat	1	g	3%
Trans Fat	0	g	
Cholesterol	0	mg	0%
Sodium	179	mg	7%
Total Carbohydrate	4	g	1%
Dietary Fiber	2	g	7%
Sugars	1	g	
Protein	1	g	

Micronutrient Highlights

Vitamin C	21.0	mg	35%
Vitamin K	10.4	µg	13%

*Percent Daily Values are based on a 2000 calorie diet.

Your daily values may be higher or lower depending on your caloric needs.



Conversion Factors for Measurements

	Metric Exact Conversion	Metric Standard Measure
SPOONS		
1/4 teaspoon (tsp)	1.2 milliliter (ml)	1 ml
1/2 tsp	2.4 ml	2 ml
1 tsp	4.7 ml	5 ml
2 tsp	9.4 ml	10 ml
1 tablespoon (tbsp)	14.2 ml	15 ml
CUPS		
1/4 cup (4 tbsp)	56.8 ml	50 ml
1/3 cup (5 1/3 tbsp)	75.6 ml	75 ml
1/2 cup (8 tbsp)	113.7 ml	125 ml
2/3 cup (10 2/3 tbsp)	151.2 ml	150 ml
3/4 cup (12 tbsp)	170.5 ml	175 ml
1 cup (16 tbsp)	227.3 ml	250 ml
4 1/2 cups	1022.9 ml	1000 ml (1 L)
DRY MEASUREMENTS		
1 ounces (oz)	28.3 grams (g)	30 g
2 oz	56.7 g	55 g
3 oz	85.0 g	85 g
4 oz	113.4 g	125 g
5 oz	141.7 g	140 g
6 oz	170.1 g	170 g
7 oz	198.4 g	200 g
8 oz	226.8 g	250 g
16 oz	453.6 g	500 g
32 oz	907.2 g	1000 g (1 kg)

Nutrient Requirements

Macronutrients

	Energy	Fat	Protein	Carbohydrate
	kcal/day	g/day	g/day	g/day
Age				
Children & Adolescents				
Boys				
1-3 years	1125	30-40	12	130
4-6 years	1350	25-35	17	130
7-9 years	1825	25-35	26	130
10-11 years	2150	25-35	33	130
12-14 years	2775	25-35	41	130
15-18 years	3325	25-35	58	130
Girls				
1-3 years	1050	30-40	11	130
4-6 years	1325	25-35	13	130
7-9 years	1700	25-35	26	130
10-11 years	2000	25-35	34	130
12-14 years	2275	25-35	41	130
15-18 years	2500	25-35	47.4	130
Adults				
Men				
19-30 years	3050	20-35	58	130
31-60 years	2950	20-35	58	130
60 < years	2450	20-35	58	130
Women				
19-30 years	2400	20-35	50	130
31-60 years	2350	20-35	50	130
60 < years	2100	20-35	50	130

Reference measurements for the table: i) moderate activity levels; ii) weight: 70 kg for men and 60 kg for women.

Sources:

FAO/WHO. (2004). Human energy requirements. Report of a Joint FAO/WHO/UNU Expert Consultation. FAO Food and Nutrition Technical Report Series No. 1. Food and Agriculture Organization, Rome.

FAO/WHO. (2007). Protein and amino acid requirements in human nutrition: Report of a Joint FAO/WHO/UNU Expert Consultation. WHO Technical Report Series 935. World Health Organization, Geneva. WHO Technical Report

Institute of Medicine, Food Nutrition Board. (2002). Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein and Amino Acids (Macronutrients). National Academic Press: Washington, DC.

Vitamins

	WATER-SOLUBLE VITAMINS							FAT-SOLUBLE VITAMINS			
	Thiamin	Riboflavin	Niacin	Vit. B6	Folate	Vit. B12	Vit. C	Vit. A	Vit. D	Vit. E	Vit. K
	mg/day	mg/day	mg/day	mg/day	µg/day	µg/day	mg/day	µg RE/day	µg/day	mg/day	µg/day
Age											
Children & Adolescents											
Boys											
1-3 years	0.5	0.5	6	0.5	160	0.9	30	400	5	5	15
4-6 years	0.6	0.6	8	0.6	200	1.2	30	450	5	5	20
7-9 years	0.9	0.9	12	1	300	1.8	35	500	5	7	25
10-18 years	1.2	1.3	16	1.3	400	2.4	40	600	5	10	35-65
Girls											
1-3 years	0.5	0.5	6	0.5	160	0.9	30	400	5	5	15
4-6 years	0.6	0.6	8	0.6	200	1.2	30	450	5	5	20
7-9 years	0.9	0.9	12	1	300	1.8	35	500	5	7	25
10-18 years	1.1	1	16	1.2	400	2.4	40	600	5	7.5	35-55
Adults											
Men											
19-50 years	1.2	1.3	16	1.3	400	2.4	45	600	5	10	65
51-64 years	1.2	1.3	16	1.7	400	2.4	45	600	10	10	65
65 + years	1.2	1.3	16	1.7	400	2.4	45	600	15	10	65
Women											
19-50 years (pre-menopausal)	1.1	1.1	14	1.3	400	2.4	45	500	5	7.5	55
50-65 years (menopausal)	1.1	1.1	14	1.5	400	2.4	45	500	10	7.5	55
65 + years	1.1	1.1	14	1.5	400	2.4	45	600	15	7.5	55

Source:

FAO/WHO. (2002.) Human vitamin and mineral requirements. Report of a Joint FAO/WHO Expert Consultation. FAO/WHO non-series publication. Food and Agriculture Organization: Rome.

Minerals

	Calcium	Magnesium	Selenium	Zinc	Iron	Iodine
	mg/day	mg/day	µg/day	mg/day	mg/day	µg/day
Age						
Children & Adolescents						
Boys						
1-3 years	500	60	17	4.1	6	75
4-6 years	600	73	21	5.1	6	110
7-9 years	700	100	21	5.6	9	100
10-11 years	1300	250	34	9.7	15	135
12-14 years	1300	250	34	9.7	15	110
15-18 years	1300	250	34	9.7	19	110
Girls						
1-3 years	500	60	17	4.1	6	75
4-6 years	600	73	21	5.1	6	110
7-9 years	700	100	21	5.6	9	100
10-11 years	1300	230	26	7.8	14	140
12-14 years	1300	230	26	7.8	33	100
15-18 years	1300	230	26	7.8	31	100
Adults						
Men						
19-65 years	1,000	260	34	7	14	130
65 + years	1,300	230	34	7	14	130
Women						
19-50 years (pre-meno- pausal)	1,000	220	26	4.9	29	110
51-65 years (menopau- sal)	1,300	220	26	4.9	11	110
65 + years	1,300	190	26	4.9	11	110

Source:

FAO/WHO. (2002.) Human vitamin and mineral requirements. Report of a Joint FAO/WHO Expert Consultation. FAO/WHO non-series publication. Food and Agriculture Organization: Rome.

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