

Comprehensive Dietary Guidelines and Nutritional Analysis for Sri Lankan Cuisine

Part 1: Advanced RAG-Optimized Dietary Guidelines

This section outlines the core principles of a healthy diet, provides detailed food group analysis, and offers guidance for managing common health conditions through nutrition, tailored to a Sri Lankan context.

1. Core Principles of a Healthy Diet (Summary)

- **Foundation:** A balanced diet should be built on variety, incorporating foods from all six major food groups daily. The majority of energy should come from complex carbohydrates, complemented by ample vegetables, fruits, and moderate protein.
- **Model Plate for Main Meals:** Visualize your plate. Half should be starchy foods like red rice. The other half should be two-thirds vegetables (including a green leafy "mallung") and one-third protein (e.g., fish, dhal).
- **Food Preference:** Prioritize fresh, home-cooked, and naturally occurring foods over processed and ultra-processed foods. Processed foods are often high in unhealthy fats, sugar, and salt.
- **Hydration:** Drink 1.5 to 2 liters (8-10 glasses) of water daily. Water is the best beverage for hydration.

2. Detailed Food Group Analysis and Serving Recommendations (Adults)

A. Cereals & Starchy Foods (6-11 servings/day)

- **Recommendation:** This group should be the foundation of your main meals.
- **Serving Size:** 1 cup cooked rice, 1 slice bread, 5-10 string hoppers.
- **Recommended Choices:** Parboiled red rice (Thambapu Hal), minimally milled rice (Nivudu Hal), Kurakkan, maize, whole wheat (atta) flour for roti/chapathi, yams (manioc, sweet potato), jakfruit, breadfruit. These are high in fiber, which helps control blood sugar and cholesterol.
- **Choices to Limit:** Highly polished white rice and white bread, as the milling process removes essential B-vitamins and fiber.

B. Vegetables & Green Leaves (3-5 servings/day)

- **Recommendation:** Eat a colorful variety daily, including at least one green leafy vegetable.
- **Serving Size:** 3 tablespoons (1/2 cup) cooked vegetables or 1 cup raw salad/mallung.
- **Recommended Choices:** Gotukola, Mukunuwenna, Kankun (excellent for iron/vitamins); bitter melon, carrots, pumpkin, beans, drumstick (murunga).
- **Preparation Tip:** Cook vegetables with a lid on for shorter times to preserve vitamins. Raw salads or mallungs retain the most nutrients.

C. Fruits (2-3 servings/day)

- **Recommendation:** Eat whole fruits rather than drinking fruit juice to maximize fiber intake.
- **Serving Size:** 1 medium fruit (banana), 1/2 cup cut fruit.
- **Recommended Choices:** Guava (Pera), papaya, mango, pineapple, banana, wood apple (Divul). Sour fruits like Nelli and guava are excellent sources of Vitamin C, which helps iron absorption.

D. Protein - Fish, Pulses, Meat, Eggs (3-4 servings/day)

- **Recommendation:** Combine plant-based proteins (pulses) with animal proteins.
- **Serving Size:** 30g cooked fish/meat, 1 egg, 3 tbsp cooked pulses.
- **Recommended Choices:**
 - **Fish:** Oily fish (Salaya, Hurulla, Kumbalawa, Tuna) at least twice a week for Omega-3 fatty acids. Small fish with bones (sprats/Haal Masso) are rich in calcium.
 - **Pulses:** Dhal, chickpeas (Kadala), green gram (Mung). Combining with rice provides a complete protein.
 - **Eggs:** An excellent, affordable protein. One egg per day is healthy for most active adults.
- **Choices to Limit:** Red meats (beef, pork, mutton) and processed meats (sausages, bacon) due to high saturated fat and links to cancer.

3. Condition-Specific Dietary Management

A. Managing High Cholesterol (Dyslipidemia)

- **Goal:** Lower LDL ("bad") cholesterol and triglycerides, while maintaining or increasing HDL ("good") cholesterol.
- **Foods to Include:**
 - **Soluble Fiber:** Oats, barley, dhal, beans, apples. Soluble fiber helps reduce the absorption of cholesterol in your bloodstream.
 - **Omega-3 Rich Foods:** Oily fish like tuna (Kelawalla), mackerel (Kumbalawa), and sardines (Salaya).
 - **Healthy Fats:** Avocado, nuts (cashews, peanuts), and seeds (gingelly, pumpkin seeds) contain monounsaturated fats that can improve cholesterol levels.
- **Foods to Limit or Avoid:**
 - **Saturated Fats:** Red meat, pork, butter, full-fat milk and cheese, coconut oil in large quantities. Limit to less than 10% of daily energy intake.
 - **Trans Fats:** Deep-fried foods (patties, rolls), commercial bakery products (pastries, many biscuits), and some margarines. Trans fats are the worst type for heart health, as they raise bad cholesterol and lower good cholesterol.
- **Meal Adjustment Example:** Instead of a breakfast with white bread and butter, choose Kurakkan porridge or whole wheat bread with an avocado spread.

B. Managing High Blood Sugar (Diabetes & Pre-diabetes)

- **Goal:** Control blood sugar levels by managing carbohydrate intake, prioritizing low Glycemic Index (GI) foods.
- **Foods to Include:**

- **High-Fiber, Low-GI Carbs:** Parboiled red rice, Kurakkan, atta flour, oats, dhal, chickpeas, and non-starchy vegetables.
- **Lean Proteins:** Fish, skinless chicken, eggs, and pulses help stabilize blood sugar and promote satiety.
- **Non-Starchy Vegetables:** Fill half your plate with vegetables like beans, brinjal, cabbage, and leafy greens to get nutrients without significantly impacting blood sugar.
- **Foods to Limit or Avoid:**
 - **Sugary Foods and Drinks:** All sweets, sugary sodas, sweetened fruit juices, and desserts. These cause rapid spikes in blood sugar.
 - **Refined Carbohydrates:** White bread, white rice, pastries, and many "short eats" act similarly to sugar in the body.
 - **Starchy Vegetables in Large Portions:** While healthy, potato, manioc, and jakfruit should be consumed in moderation, and rice portions should be reduced if they are part of the meal.
- **Meal Adjustment Example:** Instead of a large portion of white rice, have a smaller portion of red rice and increase the amount of dhal curry and a green bean curry.

4. Synthesizing Recommendations for Combined Conditions

- **Profile Example:** A user with High Cholesterol AND High Blood Sugar.
- **Integrated Goal:** The strategy is to adopt a low-GI, high-fiber diet that is also low in saturated and trans fats.
- **Key Principles:**
 - Make parboiled red rice or Kurakkan the primary starch, in controlled portions.
 - Incorporate dhal or another pulse in every main meal.
 - Choose fish or skinless chicken over red meat as the main animal protein.
 - Fill at least half the plate with non-starchy vegetables and a leafy mallung.
 - Use healthy fats from sources like avocado or a small handful of nuts for snacks, instead of biscuits or pastries.
 - Completely eliminate sugary drinks.
- **Sample Integrated Meal Plan:**
 - **Breakfast:** A small bowl of Kurakkan porridge with a spoonful of scraped coconut and a boiled egg.
 - **Lunch:** 1 cup of red rice, a generous portion of fish curry, dhal curry, and a large serving of Gotukola Sambol.
 - **Dinner:** 2 small atta flour roti with a skinless chicken curry and a side of brinjal moju (prepared with minimal oil and sugar).

5. RAG System Directives (For the LLM)

- **Objective:** Generate a personalized, actionable dietary plan based on user's health metrics.
- **Persona:** Act as an expert Sri Lankan nutritionist. Use local food names where appropriate.
- **Action:** Retrieve relevant chunks based on the user's specific conditions (e.g., high LDL, high BMI). Synthesize the advice from different relevant sections into a single, cohesive recommendation.

- **Safety:** Always conclude the response with a clear disclaimer advising the user to consult with a qualified healthcare provider for personalized medical advice.
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Part 2: Sri Lankan Food: Nutritional Information and Health Benefits

This section provides a guide to common Sri Lankan foods, their key nutritional benefits, and how they fit into a heart-healthy, weight-management diet.

1. Low-GI Carbohydrates & Starches

- **Parboiled Red Rice:**
 - **Nutrients:** High in fiber, magnesium, and selenium.
 - **Health Benefits:** Its low glycemic index (GI) helps to stabilize blood sugar levels, preventing the spikes that can lead to fat storage. The fiber content also aids in satiety and gut health.
- **Kurakkan (Finger Millet):**
 - **Nutrients:** Excellent source of calcium, iron, and fiber.
 - **Health Benefits:** A gluten-free, low-GI grain that promotes satiety and provides essential minerals often lacking in a refined diet. Ideal for porridges or roti.
- **Atta Flour (Whole-wheat flour):**
 - **Nutrients:** High in dietary fiber, protein, and B vitamins.
 - **Health Benefits:** Choosing whole-wheat atta flour for roti or thosai instead of refined white flour increases fiber intake, which helps to lower LDL cholesterol and improve digestion.

2. Lean Proteins & Pulses

- **Dhal (Red Lentils):**
 - **Nutrients:** Rich in plant-based protein, folate, and soluble fiber.
 - **Health Benefits:** The soluble fiber in dhal binds to cholesterol in the digestive tract, helping to excrete it from the body. A great source of protein to preserve muscle mass.
- **Chickpeas (Kadala):**
 - **Nutrients:** High in fiber and protein.
 - **Health Benefits:** Excellent for satiety and provides a sustained energy release. They are a staple source of plant protein and help manage blood sugar.
- **Oily Fish (Tuna, Mackerel, Sardines):**
 - **Nutrients:** Abundant in Omega-3 fatty acids (EPA and DHA).
 - **Health Benefits:** Omega-3s are powerful anti-inflammatory fats that lower triglycerides, improve the LDL-to-HDL ratio, and reduce the risk of heart disease. Aim for at least two servings per week.
- **Skinless Chicken or Turkey:**
 - **Nutrients:** A lean source of high-quality protein, B vitamins, and minerals.

- **Health Benefits:** The best choice for lean animal protein. Removing the skin significantly reduces saturated fat content.

3. Vegetables & Leafy Greens

- **Gotukola (Centella Asiatica):**
 - **Nutrients:** Rich in antioxidants, vitamins A, C, and K.
 - **Health Benefits:** Often consumed as a mallung (finely chopped and mixed with coconut), Gotukola has been traditionally used to improve circulation and reduce inflammation.
- **Mixed Vegetable Mallung:**
 - **Nutrients:** Varies, but generally high in fiber, vitamins, and minerals.
 - **Health Benefits:** A simple, fiber-rich addition to any meal. Using minimal scraped coconut keeps it low in saturated fat.
- **Brinjal (Eggplant):**
 - **Nutrients:** Contains antioxidants and dietary fiber.
 - **Health Benefits:** When prepared as a moju with minimal oil, it's a flavorful, low-calorie addition to a meal. The fiber helps with digestion.
- **Kohila (Lasia Spinosa):**
 - **Nutrients:** Good source of fiber and micronutrients.
 - **Health Benefits:** The leaves and stems are often used in curries. Its high fiber content contributes to a feeling of fullness and supports digestive health.

4. Healthy Fats & Oils

- **Gingelly Oil (Sesame Oil):**
 - **Nutrients:** High in monounsaturated and polyunsaturated fats.
 - **Health Benefits:** A healthier alternative to coconut oil for cooking as it's rich in monounsaturated fats that can help improve cholesterol levels. Use in small amounts for flavor.
- **Avocado:**
 - **Nutrients:** Excellent source of heart-healthy monounsaturated fats, fiber, and potassium.
 - **Health Benefits:** The monounsaturated fats can help lower LDL cholesterol. Potassium is essential for blood pressure regulation.
- **Nuts (Cashews, Peanuts) & Seeds (Pumpkin, Chia, Flax):**
 - **Nutrients:** Packed with protein, fiber, healthy fats, and a variety of vitamins and minerals.
 - **Health Benefits:** A handful of nuts makes a great snack, providing satiety and heart-protective fats. Chia and flax seeds are excellent sources of soluble fiber and Omega-3s.

5. Other Beneficial Foods

- **Pol Sambol (Coconut Sambol):**
 - **Nutrients:** Made from fresh coconut, which is a good source of fiber, but also high in saturated fat.
 - **Health Benefits:** Use sparingly due to its high saturated fat content. Focus on the other ingredients like onions, chili, and lime for flavor without adding extra fat.

- **Herbal Teas & Spices:**
 - **Nutrients:** Rich in antioxidants.
 - **Health Benefits:** Spices like turmeric, cumin, and coriander used in Sri Lankan curries are known for their anti-inflammatory properties. Herbal teas provide hydration and can have additional health benefits without added sugar.

Part 3: Nutritional Analysis of Sri Lankan Cuisine

Confidence Score: High. The data is primarily based on academic and governmental sources from Sri Lanka, supplemented with globally recognized nutritional databases for individual ingredients.

1. Introduction

Sri Lankan cuisine is renowned for its vibrant flavors, aromatic spices, and diverse array of dishes. At its core, the diet is centered around a staple of rice, typically served with a variety of curries (wyanjana). These curries can feature fish, chicken, mutton, vegetables, or lentils. A key characteristic of the cuisine is the generous use of coconut in its various forms (milk, oil, grated), which significantly influences the nutritional profile of many dishes. This document provides a detailed nutritional breakdown of popular Sri Lankan foods, intended for use by LLMs and nutritional researchers. The data is compiled from authoritative Sri Lankan academic and governmental sources to ensure accuracy.

2. Nutritional Profile of Key Sri Lankan Ingredients

Understanding the core ingredients is essential to appreciating the nutritional composition of the final dishes.

Ingredient	Serving Size (100g)	Calories (kcal)	Protein (g)	Carbohydrates (g)	Fat (g)	Key Micronutrients & Notes
White Rice (Cooked)	100g	130	2.7	28	0.3	Primary source of energy. Brown or red rice variants offer higher fiber.
Red Lentils (Cooked)	100g	116	9.0	20	0.4	Excellent source of plant-based protein, dietary fiber, iron, and folate.

Coconut Milk (Canned)	100g	230	2.3	5.5	24	High in saturated fats (MCTs). Source of manganese and copper.
Jackfruit (Young)	100g	95	1.7	23	0.6	Often used as a meat substitute (Polos). Good source of fiber, Vitamin C.
Breadfruit (Del)	100g	103	1.1	27	0.2	A starchy fruit, rich in complex carbohydrates, fiber, and potassium.
Gotu Kola	100g	37	2.0	7.0	0.2	Rich in antioxidants, Vitamin C, Vitamin A, and iron.
Turmeric (Kaha)	1 tsp (3g)	9	0.3	2.0	0.3	Contains curcumin, a potent anti-inflammatory compound.
Cinnamon (Kurundu)	1 tsp (2.6g)	6	0.1	2.1	0.03	Known for blood sugar-regulating properties and high antioxidant content.

3. Nutritional Analysis of Popular Sri Lankan Dishes

Nutritional values can vary based on preparation methods. The following tables represent typical values.

3.1 Breakfast Staples

Dish	Typical Serving	Calories (kcal)	Fat (g)	Carbs (g)	Protein (g)	Notes

Kiribath (Milk Rice)	1 slice (~150g)	320	10.0	52.0	5.5	Made with rice and coconut milk.
Imbul Kiribath	200g	425	13.2	75.6	5.6	Stuffed with a sweet coconut filling.
Hoppers (Appa)	1 hopper (45g)	123	2.3	25.0	2.1	Egg Hopper adds ~90 kcal and 6g protein.
String Hoppers	10 hoppers (~100g)	140	0.5	32.0	3.0	Steamed rice flour noodles. Very low fat.
Pittu	1 portion (~150g)	350	12.0	55.0	6.0	Steamed cylinders of rice and coconut.
Herbal Porridge	200ml	232	5.3	44.1	4.4	Made with rice, coconut milk, and herbs.

3.2 Main Course: Rice and Curry Components

Dish	Typical Serving	Calories (kcal)	Fat (g)	Carbs (g)	Protein (g)	Notes
Dhal Curry (Parippu)	1 cup (~200g)	250	12.0	25.0	11.0	Primary protein source.
Chicken Curry	1 cup (~200g)	350	22.0	8.0	30.0	High in protein. Fat from coconut milk.
Fish Ambul Thiyal	1 piece (~100g)	180	8.0	2.0	24.0	Sour and dry fish curry. Lower in fat.

Jackfruit Curry	1 cup (~180g)	220	14.0	22.0	3.0	Popular vegetarian meat alternative.
Beetroot Curry	1 cup (~150g)	160	10.0	15.0	2.5	Rich in folate and manganese.
Pol Sambol	2 tbsp (~30g)	90	8.0	4.0	1.0	High in saturated fat from coconut.
Gotu Kola Mellum	1 cup (~80g)	110	9.0	6.0	2.0	Nutrient-dense "salad".

3.3 "Short Eats" (Snacks)

Dish	Serving Size	Calories (kcal)	Fat (g)	Carbs (g)	Protein (g)
Fish Cutlet	1 piece (~40g)	110	6.0	10.0	4.0
Mutton Roll	1 roll (~70g)	200	12.0	18.0	6.0
Isso Wadey	1 piece (~60g)	180	10.0	15.0	7.0

3.4 Specialty Dishes

Dish	Serving Size	Calories (kcal)	Fat (g)	Carbs (g)	Protein (g)
Kottu Roti (Veg)	1 portion (~400g)	650	25.0	90.0	15.0
Lamprais	1 packet	900-1200	40-60	100-130	30-40

3.5 Sweets & Desserts (Kawili)

Dish	Serving Size	Calories (kcal)	Fat (g)	Carbs (g)	Protein (g)
Konda Kewum	1 piece (55g)	207	11.9	25.1	1.3
Kokis	1 piece (15g)	55	4.3	3.9	0.4
Aasmi	1 piece (38g)	96	4.2	14.6	0.8
Aggala	1 piece (70g)	253	0.3	63.9	2.6
Watalappan	1 slice (~100g)	300	15.0	35.0	7.0
Kalu Dodol	1 piece (~50g)	200	10.0	28.0	1.5

4. Health Implications of the Sri Lankan Diet

- **Benefits:**
 - **High in Fiber:** The diet is rich in plant-based foods like lentils, vegetables, and jackfruit, promoting good digestive health.
 - **Rich in Phytonutrients:** The extensive use of spices like turmeric, cinnamon, and black pepper provides a wealth of antioxidants.
 - **Good Quality Protein:** With a strong emphasis on fish and lentils, the diet provides excellent sources of lean and plant-based protein.
 - **Healthy Fats:** While high in coconut, the presence of omega-3 fatty acids from fish provides a balance.
- **Potential Concerns:**
 - **High Carbohydrate Load:** The central role of white rice can lead to a high glycemic load. Opting for red rice can mitigate this.
 - **Saturated Fat Content:** The frequent use of coconut milk increases the intake of saturated fat. Moderation is key for cardiovascular health.
 - **Deep-Fried Foods:** The popularity of "short eats" and some festive sweets can contribute significant amounts of unhealthy fats and calories.

Part 4: Data Sources

- Department of Agriculture & Wayamba University of Sri Lanka ("GIAHS in SRI LANKA" nutritional data)

- Medical Research Institute (MRI), Sri Lanka (Confirmation of "Sri Lanka Food Composition Tables 2021")
- United States Department of Agriculture (USDA) FoodData Central (for base ingredients)
- Peer-reviewed academic journals and publications on South Asian diets.