DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – WAYANAD DISTRICT

PROJECT SUBMITTED

In the Partial Fulfillment of the Requirement for the Award of the Degree of

B.Sc. NUTRITION AND DIETETICS

BY

SONA T.B

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DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

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CERTIFIED AS BONAFIDE RESEARCH WORK

Signature of the Internal Examiner

Signature of the External Examiner

DECLARATION

We hereby declare that the project entitled **"DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – WAYANAD DISTRICT"**, submitted in partial fulfillment of the requirement for the award of the degree of B.Sc Nutrition and Dietetics is a record of original research work done by me under the supervision and guidance of **Ms Sarika V Rajan**, Assistant Professor, Department of Clinical Nutrition and Dietetics, St. Teresa's College (Autonomous), Ernakulam and has not been submitted in part or full of any other degree/diploma/fellowship or the similar titles to any candidate of any other university.

Place: Ernakulam

Anin Regeena steaphen

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Date: 29/04/2024

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CERTIFICATE

We hereby certify that the project entitled "**DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA–WAYANAD DISTRICT**", submitted in partial fulfilment of the requirement for the award of the degree of B.Sc. Nutrition and Dietetics is a record of original work done by **Ms. Anin Regeena Steaphen, Ms Sona T.B, Ms Fahana M**, during the period of the study under my guidance and supervision.

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1. INTRODUCTION

“A Recipe has no soul. You, as the cook, must bring soul to recipe.”

- THOMAS KELLER

Indian food differs depending on the area. Certain Indian states have a long history of creating distinctive meals that are typically served during social and religious events. An superb use of spices and flavorings highlights the many commonalities between India's culinary regions. These include ginger, chilies, fenugreek, saffron, and turmeric. They also include cardamom, cumin, cloves, fennel seeds, and garlic. Masalas, or spice combinations, are an essential part of Indian cooking. Fresh or dried, locally sourced ingredients are used to manufacture masalas, which are prepared everyday alongside grains, pulses, and vegetables.

Kerala's topography, past events, and rich cultural legacy have all shaped the state's rich and varied cuisine culture. The widespread use of coconut in a variety of forms, such as grated coconut, coconut oil, and coconut milk, is one of the essential components. A basic food, rice is frequently served with a range of delectable side dishes and curries. The abundance of fish and other seafood is a result of Kerala's long coastline. Popular traditional foods include puttu, idiyappam, appam, and fish curry. The use of spices like cardamom, cloves, cinnamon, and black pepper gives the food complexity. Kerala is also well-known for its extravagant feasts, known as "Sadhya," which are served on banana leaves at festivals and other events. The meal consists of a variety of vegetarian meals and concludes with the sweet dessert paayasam.

"Exploring the Culinary Delights of Kerala: From Backwaters to Plate" - Kerala's food culture, from traditional dishes to modern interpretations. It explores the role of food in Kerala's festivals, rituals, and everyday life, providing insights into the state's culinary traditions.

"Taste of Kerala: A Culinary Adventure" - The article combines travel and food exploration, taking readers on a gastronomic tour of Kerala's diverse culinary landscape. It covers everything from street food to fine dining experiences, offering recommendations for food enthusiasts visiting the state.

Kerala's diverse culinary traditions are intricately connected to the country's history, topography, population, and culture. Kerala contains sizable minority populations of Muslims and Christians who are mostly non-vegetarians, as well as a substantial number of Hindus who practice vegetarianism. As a result, the state's cuisine features a wide variety of vegetarian and meat, fish, and fowl dishes. Kerala traditional cuisine features an extensive variety of tastes, ingredients, and cooking methods that have developed over many generations. These meals have a strong connection to the history, geography, and cultural diversity of the area.

Use of Coconut: Kerala food heavily relies on coconut, earning it the moniker "Land of Coconuts." Many coconut products, including grated coconut, coconut oil, and coconut milk, are often utilized in cooking to give food a unique and flavorful touch. The main component of Kerala cuisine is rice, which is eaten in a variety of ways, including steamed rice, rice flour, and rice noodles (idiyappam). Fish, shellfish, lentils, and an assortment of vegetables are additional basic ingredients.

Spices and Aromatic Herbs: The sophisticated use of spices and aromatic herbs in Keralan cuisine is well-known. Black pepper, cardamom, cloves, cinnamon, turmeric, and fenugreek are examples of common spices. Fresh herbs are also frequently used to improve the flavor of food, including mint, cilantro, and curry leaves.

Kerala's have long prepared some dishes, such as appam (rice pancakes), dosa (fermented rice and lentil crepes), and idli (steamed rice cakes), using the fermentation process. Foods that have undergone fermentation have more nutrients and a distinctive flavor and texture.

Seafood: Kerala cuisine places a high value on seafood because of the state's vast coastline. It's popular to eat fish, prawns, crabs, and shellfish in a variety of preparations such as curries, fries, and grilled meals.

Vegetarian Delights: Kerala is renowned for its seafood, but it also offers a wide variety of vegetarian meals. These consist of thoran (stir-fried veggies with coconut), olan (pumpkin and lentil stew), erissery (pumpkin or yam curry), and avial (mixed vegetable curry).

Kerala is well-known for its extravagant feasts, particularly the customary "Sadhya." During festivals and other events, sadhya, a vegetarian feast, is served on banana leaves. It usually comprises of a large variety of foods served in a predetermined order, such as rice, curries, pickles, and sweets.

Desserts & Sweets: Kerala provides a wide range of desserts and sweets to suit every taste. Popular options include unniyappam (sweet rice fritters), ada pradhaman (rice flakes pudding), and paayasam (a sweet pudding prepared with milk, rice, or lentils).

The origin of food has a great deal to do with the area where it was first acquired and processed through different methods. The term "traditional cuisine" refers to a broad range of culinary cultures with distinct regional variations and tastes. The extinction of nutrient-dense food products and skills passed down through the generations may result from the loss of traditional knowledge related to food production. Traditional meals are very popular because of these unique qualities. They provide job opportunities, boost food security, enhance nutritional status, and diversify dietary plans

Wayanad is a district located in the north- east of the Indian state of Kerala, in the southernmost tip of the Deccan Plateau. The literal translation of “Wayanad” is “Wayal-nad” or “The Land of Paddy Fields”. It is well known for its dense virgin forests, majestic hills, flourishing plantations and a long standing spice trade. Wayanad’s cool highland climate is often accompanied by sudden outbursts of torrential rain and rousing mists that blanket the landscape. It is set high on the majestic Western Ghats with altitudes ranging from 700 to 2100 m.

There are currently no trustworthy texts or sources that offer accurate information on traditional recipes. The purpose of this work is to produce a study with the following goals: "Documentation and Nutritive Evaluation of Traditional Foods of Kerala – Wayanad district."

1. To recognize and gather data on the diverse indigenous meals found in Kerala's various districts
2. To record the ways in which they prepare traditional cuisine.
3. To assess the traditional food that has been chosen and its nutritional qualities.

2. REVIEW OF LITERATURE

Literature relevant to the present study " Documentation and nutritive evaluation of traditional foods of Kerala – Wayanad district" is reviewed under the following heads

2.1 Importance of traditional knowledge

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2.2.1 Traditional food of India

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2.1 Importance of traditional knowledge

The research highlights the vital role that lesser-known native plant species have in India's food, nutrition, and livelihood security. Given that women are the primary keepers of dietary knowledge and customs, a total of 150 participants 90 Adi women and 60 important, informed community members were chosen from the districts of East Siang and Upper Siang Ranjay *et al.* (2021) have reported. These species, which come from various land use methods, not only increase food and nutritional security but are also sold in the neighborhood markets for respectable profits.

Communities in the Himalayas demonstrate a sophisticated system of agriculture and medicine that offers therapeutic security in addition to sufficient dietary diversity and nutrition. This study examines the relationship between food and medicine as experienced by marginal hill people in the central Himalaya. Its goal is to evaluate traditional agricultural practices and food plants in light of dietary diversity, nutritional value, and medicinal properties through extensive research. Ojha *et al*. (2022)

According to Kumar G S *et al.* (2022), one of the leading risk factors for an escalating obesity burden in India is non-nutritious choices. Underpinned by the nutrition transition theory, this qualitative inquiry was designed to understand the urban middle-class Indian consumers' views about processed foods and rapidly changing food choices Making unhealthful decisions is one of the main causes of India's rising obesity rate. This qualitative investigation, which was based on the nutrition transition theory, aimed to comprehend the opinions of Indian middle-class urban consumers on processed foods and their fast evolving dietary preferences.

Casari *et al*. (2022) suggested that global urbanization is accelerating most quickly in Sub-Saharan Africa. While the Westernization of nutrition and lifestyle is already noticeable in metropolitan areas, people in rural areas still lead traditional, rural lives. This study details the food preferences of Burkina Faso families at various stages of urbanization.

Tibet has historically relied on a limited number of untamed food plants. These mostly make up for the deficiency of fruits and vegetables in the traditional Tibetan diet, especially for pastoralists, and they play a much larger role during famines by taking the place of roasted barley flour. Nowadays, very few wild food plants are frequently eaten; this is especially true in isolated locations and among pastoralists, and less so in larger cities and villages. Younger townie generations have nearly completely lost their knowledge of traditional botany. Many locals have become specialists in gathering the natural resources that are becoming more and more in demand both in China and elsewhere as a result of modernization and globalization processes. The Tibetan people gain a great deal from these initiatives. Tibetan medicine views nutrition as a means of treating illness, and medical texts detail the medicinal qualities of a number of wild plants that Tibetans now eat. Boesi A. (2014)

Myanmar is a rapidly expanding country and one of the hotspots for biodiversity. It is imperative to conduct floristic study in Myanmar, and ethnobotanical investigations of wild edible plants (WEPs) would yield fresh insights into the country's natural plant resources.The majority of the species (47 species) were used as wild vegetables, with 31 species used for nuts and fruits in second place. Eighteen WEPs were eaten as therapeutic foods. Shin *et al*. (2018)

Although food is the primary source of nutrition, some ancient practices are being abandoned as modernity grows. The working population's changing lifestyles and increasing wealth are some of the factors that are currently pushing people to consider their wellness. Other factors include the rising costs and duration of sick leave. Interest in traditional medicine has grown on a global scale. There are initiatives in place to oversee and control traditional herbal medicine. Traditional Indian medicine, or Ayurveda, is still one of the oldest continuously practiced practices.

Aneena (2009) stated that the goals of her study, "Documentation and quality evaluation of traditional foods of central zone of Kerala," were to identify, gather data on, and document the diverse traditional foods of the central zone of Kerala. Method preparing and assessing the chosen, less-used traditional foods' quality attributes. Four districts in Kerala's central region Ernakulam, Thrissur, Palakkad, and Malappuram were the sites of the study. The respondents were senior individuals who knew the specifics of the customary foods and preparations in each community. The communities that the responders represent determined which categories they fell into.

In order to confirm the possibility of knowledge gaps across communities and between men and women, this study looked into the local botanical knowledge of native food plants in three rural communities in the semiarid region of Paraíba State, Brazil.

In the sub-tropics, stingless bee honey (SBH) is a traditional natural cure and therapeutic substance utilized by indigenous people. In addition to being used in a variety of non-food contexts that are poorly documented in sub-Saharan Africa, forest supplementary bush honey (SBH) is a prime non-timber forest product (NTFP) that has the potential to revitalize indigenous foodways and generate income in rural areas. Taken together, these contexts collectively represent a significant portion of the local traditional ecological knowledge (TEK) passed down through the generations.

In ethnobiological study, food knowledge and consumption in relation to migration is a crucial subject. The mechanism by which outside variables influence migratory populations' dietary knowledge is not well studied. This study illuminates how resource accessibility, the dominant cuisine of the host country, and ethnic tourism affect the food knowledge tradition of Tyrolean migrants and their descendants in Treze Tílias. It does this by taking into account the social organization and power relations of food knowledge transmission and distribution. In the global market for healthy foods, food-medicine products are becoming more and more popular as essential tools for managing one's health on a daily basis. However, regional variations in food-medicine knowledge might occur due to biocultural differences, which makes it difficult to share these health methods globally. With the goal of bridging the gap between East and West perspectives on food medicine, this study first mapped out the historical origins of the food and medicine continuum in both regions. Next, it conducted a cross-cultural evaluation of the significance of China's food-medicine products. Finally, it outlined the current legal definitions for food-medicine products.

The traditional wisdom surrounding medicinal food plants (MFPs) is essential in combating hidden hunger and preserving the indigenous population's health. The Gaoligongshan region, China's richest biosphere reserve in terms of biocultural variety, has an abundance of MFP resources. Diverse linguistic groups in the area also possess extensive traditional botanical knowledge. Still, there aren't many thorough and organized studies.

Traditional foods are essential components of dietary patterns and play a significant role in the history, culture, identity, and legacy of a nation or region. There is a need to research, register, and promote traditional foods since most countries have little information available about the nutritional makeup of these foods.

2.2 History of traditional foods

2.2.1 Traditional foods of India

Indian traditional cuisine has been cooked in various ways across the nation for a long time. In India, traditional knowledge regarding food processing, preservation methods, and therapeutic applications has been developed over many generations. Food systems are able to provide several biological processes in the human body through food components. Because Indian traditional foods contain functional elements including probiotics, antioxidants, dietary fiber, and compounds that cure the body, they are also acknowledged as functional foods.

Spices and herbs are used in traditional ways that are deeply ingrained in cultural heritage, cuisine appreciation, and health-related practices. It is still difficult to prove the health benefits of food by scientific methods, especially when one compares them to the criteria used to evaluate pharmaceuticals. Pharmaceuticals are concentrated, purified small-molecular-weight substances that are ingested. Food is consumed in highly socialized settings in combinations and in comparatively large, unmeasured quantities. The true difficulty is not in demonstrating the health advantages of foods like herbs and spices, but rather in identifying these benefits and creating scientific ways to demonstrate them. Linda C Tapsell *et al*.(2006)

India is experiencing a rapid shift in diet at the same time that the country's rates of obesity, metabolic syndrome, and type 2 diabetes are rising (T2DM). A nutritious, traditional home-cooked meal rich in fiber, fat, and calories is being replaced by a growing number of packaged, ready-to-eat items that are high in calories, high in fat, refined carbs, salt, and sugar, and low in fiber. Even though fats and oils have always been a necessary component of our diets, there has been a shift in the way that they are consumed, both in terms of quantity and quality..

The traditional culinary expertise of the people in India's Uttarakhand State. Following conversations and exchanges with the community, 38 customarily prepared foods from specific Uttarakhand research regions were documented. In addition to boiled rice and wheat flour chapattis, finger millet flour porridge, boiled barnyard and foxtail millets, and dishes made with locally grown pulses like black and horse gram, as well as vegetables like potatoes, radish, and other leafy vegetables, were commonly consumed dishes.

Traditional foods have influenced modern eating habits and are a reflection of cultural inheritance. They are essential components of the dietary patterns found in many nations, and as such, they are crucial for precise estimation of the dietary intakes of the populace.

Over the years, there has been a significant surge in interest in the potential and usefulness of probiotic yeasts derived from fermented foods. Lactic acid bacteria and yeasts coexist together in many fermented foods and drinks by promoting each other's development and survival. More research has been done on probiotic lactic acid bacteria strains than on possible probiotic yeasts. The only commercially available strain of fully researched probiotic yeast is Saccharomyces cerevisiae variation boulardii. Information on possible probiotic yeasts in several traditional fermented foods and beverages may be found in this review article.

A crucial dietary strategy to address the issues of rapidly increasing diet- and lifestyle-linked noncommunicable chronic diseases (NCDs) of indigenous people globally is to improve food and nutritional diversity based on the diversity of traditional plant-based foods. To develop nutritional support strategies against an NCD epidemic in contemporary indigenous communities, restoration of native ecosystems, resuscitation of traditional food crop farming, and resuscitation of traditional knowledge of food preparation, processing, and preservation are crucial stages.

India is known around the world for its spices and therapeutic plants. Numerous physiological and pharmacological characteristics are displayed by both. The current biomedical endeavors center on their scientific qualities, aiming to generate either functional foods or nutraceuticals, and to offer proof based on science for the traditional usage. Turmeric is used in traditional Indian medicine systems to treat gastrointestinal complaints, rheumatoid arthritis, deworming, rhinitis, wound healing, and cosmetic purposes. Research conducted in India has examined the anti-inflammatory, cholekinetic, and antioxidant properties of this substance. More recently, studies have concentrated on its potential to prevent precarcinogenic effects, as well as its anti-inflammatory and anti-atherosclerotic properties in biological systems, both in vitro and in vivo in humans and animals. It has been discovered that curcumin and turmeric both boost detoxification enzymes, guard against DNA damage have the ability to enhance DNA repair, reduce mutations and the development of tumors, and have antioxidative potential in animals. Turmeric has been shown in a few limited clinical studies to drastically reduce smokers' urine mutagen excretion and to reverse precancerous palatal lesions. In oral epithelial cells, it decreases micronuclei and DNA adducts. It stops nitroso compound synthesis in vitro as well as in vivo. It lowers hyperlipidemia in obese rats and postpones the development of cataracts in diabetics. Turmeric's therapeutic and preventive benefits have been linked to a number of recently discovered molecular targets. Rich in soluble fiber, fenugreek seeds are used in Indian cooking to lower cholesterol and blood sugar levels. They can also be used as a dietary supplement for those with diabetes. Likewise, it has been discovered that ginger, onions, and garlic positively modify the carcinogenesis process.

Among Indian customs, South Indian cultures are distinct and varied. Despite significant changes in Indian customs over the years, states in South India appear to have remained largely identical in terms of their vegetarian ethnic eating patterns; the reason for this is not well understood. The ethnic roots of many Indian cultural practices are extensively mentioned in Hindu traditional texts. The current review looks at the various vegetarian ethnic foods found in South India as well as the significance of the food-related ideologies mentioned in the traditional texts. Data from an ethnographic study were created using a variety of methods and then presented regarding the most popular vegetarian cuisine in each state. It has been noted that there is a significant degree of similarity between the range of vegetarian dishes cooked in South Indian Hindu groups. Our research also emphasizes how tradition has had a significant impact on the development of vegetarian cuisine, which is still popular in South India today.

2.2.2 Traditional foods of kerala

Indigenous and local communities have been using traditional and indigenous knowledge in accordance with local laws, customs, and traditions for generations. It has been passed down and changed through the generations. The role of traditional knowledge has been and continues to be significant. In crucial domains like the development of agriculture, medical care, and food security. International recognition of the value of traditional and indigenous knowledge for both its producers and the global community at large, as well as the necessity of fostering, preserving, and protecting such information, is expanding (Aneena, 2009).

Kerala's food has been heavily influenced by foreign cultures, with every religion from Muslims to Syrian Christians developing its own cuisine and cooking methods. The unique flavour of the Moplah cuisine in the Malabar region is a holdover from the traders that frequented the area. Coconut, rice, tapioca, and spices like ginger, cloves, cinnamon, and black pepper are all commonly found in Keralan food. Cassava was brought by the Portuguese and is now a popular food in Kerala. The area is particularly well-known for its Sadhya, which is served on banana leaves during the Hindu holiday of Onam and consists of boiling rice and a variety of vegetarian delicacies. Kerala's lengthy coastline means that a lot of seafood, including fish, prawns, mussels, and crabs, are used in its cuisine.

2.2.3 Meaning, concepts and definition

Kerala is a state on India's southwest Malabar Coast where the culinary style known as Kerala cuisine first emerged. Rice is typically served with a variety of dishes, both vegetarian and non-vegetarian, that are prepared utilizing fish, fowl, and red meat. Mustard, coconut, curry leaves, and chillies Asafoetida, tamarind, seeds, turmeric, and other spices are also used in the recipe.

Kerala's traditional cuisine has strong ties to the history and culture of the region. Kerala's topography, climate, and trading connections with other nations all have a significant impact on the state's cuisine. The cuisine is distinguished by its use of locally and freshly sourced ingredients, such as rice, coconut, herbs, and spices. Keralans eat rice as a staple cuisine, typically served with a variety of side dishes such sambar, rasam, and thoran. Coconut is another common ingredient in Keralan cooking, where it can be roasted, shredded, or ground into a paste. Keralan cuisine is made using a variety of methods, including boiling, frying, steaming, and baking.

Traditional foods are those that have been consumed for a very long time and are built on a strong foundation of culture, customs, and the natural environment of a nation or an area of the world (Tokuji, 1986). Kuhnlein and Receveur (1996) described a traditional food as food from a certain culture that is accessible through local resources, acceptable culturally, and includes sociocultural connotations, methods of procurement and processing, use, composition, and nutritional implications for those who consume it.

According to Azarand (1996), traditional food is a particular dish made in a region using locally sourced ingredients that is not prepared in other areas. According to Rao and Srivastava (1998), traditional cuisines are those that have been passed down through the generations and have evolved out of a need to make the most use of local foods while utilizing artifacts and skills that are readily available. A traditional product, according to Jordana (2000), is a "representation" of a group that belonged in a specific area and is a component of a culture that suggests the collaboration of the people occupying that region. The author also stated that for a product to be considered traditional, it must be associated with a region and a collection of customs, which will inevitably guarantee its continuity over time.

Traditional cultures and economics revolve around traditional food, and the methods used for gathering, storing, and preparing food serve to strengthen indigenous identity and culture (Damman *et al.*, 2008).

2.2.4 History and ethical background

Morality and food consumption are as old as morality itself. However, a variety of methods for critically analyzing food production and consumption patterns have been developed over time.Ancient Greek and Jewish food ethics concentrated on the topic of moderation and the differentiation between legal and illicit food products, but early Christian morals simply refused to assign any moral value to food intake. But during the Middle Ages, food turned out to be one of the primary goals of monastic programs for moral practice (askesis). The increased scientific interest in food intake during the seventeenth and eighteenth century led to important shifts in food ethics. However, the nineteenth century saw the discovery of the social component of food ethics, which prompted a greater emphasis on the production and distribution of food items.

Food preferences and choices are influenced by social, cultural, and economic variables, according to Achaya (1998). The origins of India's traditional meals and cuisines can be traced back to the pre-Aryan era, with some even dating back to the Aryan period. Later, new foods that enhanced India's unique cuisine were influenced by Europe. The author also made the point that each Indian community has a unique and distinctive food ethics.

The authors also discussed traditional and regional items as aspects of the nation's cultural heritage that have the ability to stabilize and bring people together in their areas. According to Trichopoulou *et al*. (2007), the research and registration of traditional foods helps conserve important components of a nation's culinary heritage and culture and presents traditional cuisines to future generations, both domestically and abroad.

Azizi *et al*. (1998) claim that traditional cuisines have changed throughout millennia, taking into account socioeconomic factors, local material availability, and prevailing climatic circumstances. According to Parpia (1999), traditional Indian dishes evolved throughout millennia as a part of at least forty indigenous tribes.

According to Pratima (2000), India is the birthplace of timeless culinary mastery and has a rich legacy of a diverse range of traditional dishes. According to Slimani *et al.* (2002), traditional foods are a reflection of culture, history, and way of life.

The writers also mentioned regional and traditional goods that are a part of the country's cultural legacy and have the power to unite and stabilize local communities. Research and registration of traditional foods aid in the preservation of, according to Trichopoulou *et al*. (2007) vital components of a country's culinary legacy and culture and give upcoming generations both domestic and foreign the opportunity to experience traditional meals.

Food products' ties to tradition, geography, and culture were regarded as crucial qualitative attributes (Holt and Amilien, 2007).

According to the Bhagavad Githa, "from food do all creatures come into being," food is an essential component of all cultures.When man ceased to be a food hunter, traditional food processing began in India (Potty, 1986). For most people, traditional diets that have evolved over hundreds of years are essential. (Tyn, 1986).

2.3 Traditional foods of adequacy of different group

Foods and recipes that have been passed down through the generations or that have been consumed for a long time are considered traditional.Foods and dishes that are considered traditional may have historical precedents in national, regional, or local cuisine. Large food processing plant facilities, eateries, small producers, and home cooks can all prepare traditional dishes and drinks. Indian cuisine can be broadly classified into two categories: North Indian and South Indian. Since many people in northern India are vegetarians, many of the most creative veggie recipes come from these parts of the country. The most popular spices used to flavor authentic Indian food include turmeric, cumin, coriander, mustard seeds, cardamom, chili, garlic, cloves, saffron, fennel, nutmeg, star anise, and fenugreek. Staple ingredients in Indian cooking include rice, tomatoes, potatoes, lentils, chickpeas, onions, and yoghurt. Kristbergsson *et al*. (2016) Similar to idli, dosa is a fermented food that is primarily consumed in southern India. The main ingredients of this highly seasoned pancake are black gram and rice. A traditional herbal drink made from Decalepishamiltonii roots is called nannari sharbat. The herb is known as Ananthamula in Ayurveda. During the summer, beverages are utilized to quench thirst and have hepatoprotective properties that are beneficial to stomach health (Preetam Sarkar *et al*., 2015).

A classic steam-cooked Indian dish called idli is made by steaming a wet, fermented batter consisting of black gram dhal and rice in a 3:1 ratio inside a mold. It is well-known for having a pleasant sour flavor, a distinct scent, and a soft, spongy texture. (Ghosh and others 2011).
South Indian parotta is a multi-layered, round, unleavened flatbread made using wheat flour. In the southern Indian states, it's one of the staple foods. Wheat flour, salt, water, and oil are the basic constituents of parotta; however, optional additions such sugar and In addition, eggs are utilized in the parotta recipe. (Dasappa, Indrani. and Venkateswara Rao, G. 2004).

According to Somnath Basak *et.al*. (2023) In India, plant-based and dairy-based foods make up the "vegetarian" diet, whilst meat, eggs, and fish make up the "non-vegetarian" diet. The eastern, north-eastern, and southern regions of India primarily rely on rice-based products, whilst the northern region is primarily dependent on wheat products.

Traditional functional foods are a good example of how food may have a purpose beyond just being a source of nutrients. Consuming these classic functional foods on a regular basis offers a great way to prevent many illnesses. A traditional South Indian dish is raita, which is a spiced soup. Indian sesame oil, turmeric, tomato, chili pepper, pepper, garlic, cumin, curry leaves, mustard, coriander, asafoetida, sea salt, and water are customarily added to tamarind juice as a basis. A typical example of a traditional functional meal is rasam, which has all of its constituents approved by medicine for a variety of conditions. The traditional claim of rasam is supported by preclinical and clinical investigations conducted on the substance. This review is an effort to gather

the literature on rasam, its components, and to emphasize its underappreciated medical potential.(Agilandeswari Devarajan *et al*. 2017)

While regional variations exist in traditional Indian meal patterns, all typically feature a diverse array of dishes from each food group. (2020, Kalpana)

2.4 Health and nutritional aspects of traditional foods

2.4.1 Health and nutritional advantages of traditional food

Traditional foods can be prepared with a lot of dairy and animal fat, meat, or carbohydrates, and are typically thought of as heavier dishes served in greater portions. Typically, traditional meals are served family-style, with some items maybe saved for exceptional events where there won't be another meal that day.

Not only do traditional foods reflect culture, but they often provide essential nutrients as well. These foods support general health and wellbeing because they are high in dietary fiber, vitamins, minerals, and antioxidants. Furthermore, adherence to traditional diets has been linked to a lower chance of developing chronic illnesses like obesity, diabetes, and heart disease. We can encourage better eating habits and avert diet-related health issues by include traditional foods in contemporary diets.

Dairy products with a fermentation process were among of the first “processed” meals that humans ate, and they have been preserved for generations.1. "Foods or beverages manufactured through controlled microbial growth and enzymatic conversion of major and minor food components" is the current definition of fermented foods.1. Specifically, fermented (or cultured) milks are created by introducing the right bacteria to animal milk that has typically been heated and then allowed to settle to lower the pH, either with or without coagulation preparation. The most popular types of fermented milk products include kefir, yogurt, and cultured cream and buttermilk. However, there are other variants of these products depending on the milk type, region, and historical practices.

Good quality protein was supplied by the modakams made for Ganesh Chaturthi and the naivedyam made for Gokulashtami, which complimented amino acids (Subbulakshmi, 2005). It was discovered that Karnataka's traditional processed food product, halubayi, was extremely nourishing with high levels of vitamins, carbohydrates, and protein (Nagaraja, 2006). The traditional Karnataka snack foods, chakli, sev, khara gritters, laddu, and hurigalu, have been shown to have nutritional benefits by Kulkarni *et al*. (2006).

The availability of fancy powders and medications in the current era has caused nutritional imbalances and poor health, in contrast to the past era when home gardening was prevalent and people preferred fresh foods free of additional chemicals. They even used to cure some health issues using natural remedies, much like we do now because Ayurveda relied on natural herbs and plant extracts for healing, people lived longer and in a fresher, less polluted environment. The modern era has its advantages as well. For example, advances in allopathy medicine have made it possible to treat numerous ancient diseases that were incurable and even completely eradicate others, like polio and smallpox. In conclusion, each period had advantages and disadvantages of its own, therefore it would be best if we took into account their respective benefits and made the effort to live a healthy life now.

Thirty distinct traditional and popular Indian cuisines that were either ready to eat, easily reconstitute, or freeze-dried items had their approximate and mineral compositions assessed. Out of the thirty products, two items' mineral composition and eleven products' proximate score have recently been disclosed elsewhere. Vegetable pulav, dried pulses/curries, upma, mutton/chicken curry all of which are components of main meals and certain fruit beverage powders made of pineapple, mangoes, and grapes are among the many goods used in this study. After being put through tests for microbiological safety and shelf stability (minimum of 6–12 months at ambient settings), each product was determined to give, depending on the kind, 350–660 kcals 100 g 1 (on a moisture-free basis). The meat/chicken and pulse items were observed to be high in protein. fat percentage in the amount of hydrogenated oil used in each product's production determined its variation. But the fruit-based goods have very little fat and very little protein. Iron, zinc, copper, manganese, aluminum, lead, sodium, potassium, calcium, magnesium, and phosphorus are among the several minerals and trace elements that were examined. The various substances used in their manufacturing caused variations in the elemental composition of each product. It is interesting, therefore, that the levels of pollutants like lead and aluminum are significantly lower than those recommended by reputable organizations like PFA and ASC. The nutrient database created thus far permits nutrient labeling of the products in addition to indicating that they are safe and/or of high nutritional quality. Additionally, it assists meal planners and dietitians in creating various diets to match the customer's diverse wants. (Prasad *et.al.* 2000)

All tissues require essential fatty acids for structural integrity and the formation of cell membranes; long-chain polyunsaturated fatty acids (LC-PUFA) are especially abundant in the brain, retina, and other neural tissues. These fats act as particular eicosanoids' precursors, controlling a wide range of organ and cell functions. In addition to the well-established significance of n-6 essential fatty acids in humans, especially in early life, recent studies on humans suggest the necessary nature of n-3 fatty acids. The primary conclusions are that docosahexaenoic acid (DHA) considerably improves visual acuity maturation and cognitive abilities, and that light sensitivity of retinal rod photoreceptors is significantly reduced in babies with n-3 fatty acid deficit.

DHA is a vitamin that is conditionally needed for healthy neurodevelopment in human.(Uauy *et al*. Lipids. 2001)

2.4.2 Impact of dietary transition on health and disease

Unfavorable effects on health are brought about by the growth of agriculture and food systems, the rise in food availability that follows, dietary changes, economic expansion, and urbanization of developing nations. The average diet's composition has shifted, with a greater emphasis on fats primarily saturated fats and animal-derived sugars and carbohydrates. Concomitant lifestyle changes in an increasingly urbanized environment lead to a reduction in physical activity, which is a contributing factor to overweight and obesity.

Thus, the adverse effects of dietary changes particularly the rise in obesity and non-communicable diseases exacerbate the current malnutrition burden in emerging nations. The physical and financial burden of malnutrition on developing societies is exacerbated by this dual burden.

A diet shift is defined as moving from a comparatively monotonously diversified diet to an industrial diet, which is typically more varied and contains more animal products, processed foods, added sugar and fat, and frequently alcohol. This is coupled with a shift in how work and leisure time are structured, which results in less physical exercise and a sharp rise in the number of obese and overweight persons.

Many age-related illnesses are attributed to deficits in micronutrients. The elderly are one demographic that is especially vulnerable to vitamin deficiencies. A large portion of the daily nutritional needs of many older people, including the frail and those residing in institutions, are met by ready meals that are variable in quality and frequently of low nutritional value. To guarantee that phytochemicals with established nutritional value and micronutrients (minerals and vitamins) are preserved during the production of ready meals, new regulations are required. This would aid in the selection of healthier food, together with raising knowledge of the significance of micronutrients for health and providing easy-to-read labelling of the micronutrient content of ready meals. These objectives can be met with the assistance of professionally prepared ready meals under the direction of dietitians and nutritionists, ensuring that ready meals become a the answer to inadequate nutrition in the elderly, as opposed to being seen as a contributing factor.(Hoffman R. 2017).

Schmidhuber (2004) noted a shift in diet that was typified by an increased consumption of cholesterol, saturated fat, and calories. Before learning to use fire for cooking, early humans spent millions of years as hunters and gatherers. The agricultural production of meat, dairy, and grains only a few thousand years ago led to an increase in the consumption of lactose, starch, and saturated fats. Idli is the staple dish of South Indian cuisine, and dosa increases probiotic activity. According to Preethikaa and Brundha (2018), Indian traditional rasam contains strong antipyretic, hypoglycemia, and hypertension-lowering properties (Alleyne *et al.*, 2005).

Increased incidence of obesity and related diseases including diabetes, heart disease, and dental cavities were caused by consumption of market food and decreased consumption of traditional diet, together with decreasing physical activity. Kuhnlein (2003) found that consuming more industrially processed food results in inadequate intake of micronutrients in addition to obesity and other related disorders.

Any material that an organism consumes for nutritional sustenance is considered food (Davies, 2000).Generally speaking, food is either plant- or animal-based (Prashaanthi and Brundha, 2018). There are regional differences in preparation. Given the 8,000-year history of diverse ethnicities and civilizations interacting with the Indian subcontinent, Indian cuisine today reflects the diversity of regional cuisines and tastes (Harsha and Brundha, 2017). Subsequently, Indian food became even more varied as a result of trade with British influence (Chaudhary and Yadav, 2020). Food items were categorized by the Aryans according to their nature into the following categories: Mamasavarga (animal products), Payovarga (milk products), Madhyavarga (alcoholic beverages), Phala (fruits), Shakna (vegetables), and Samidhanya (cereals) (Sharma and Parisi, 2017; Shreya and Brundha, 2017).Indian food has amazing flavors and is a great medicine delightful cuisines (Cukkemane, Kumar, and Sathyamoorthy, 2020; Shenoy and Brundha, 2016).

The body receives enough nutrients from traditional Indian meals.Indian cuisine has a lot of grain-based dishes that are great for people watching their carb intake. Indian dish curd, which has a strong medicinal value, is only served as a last resort during meals (Singh and Das, 2017).High nutritive and therapeutic effects are associated with plant oils found in Indian cuisine (Banerjee, Thiagarajan, and Thiagarajan, 2017). Vitamin C content in medicinal herb extracts, such as amla extract, is high and beneficial to health (Rathi, Riddell, and Worsley, 2018).Idli is the staple dish of South Indian cuisine, and dosa increases probiotic activity. Traditional Indian rasam lowers blood pressure (Alleyne *et al*., 2005) and possesses strong antipyretic, hypoglycemic, and antibacterial properties (Preethikaa and Brundha, 2018). Certain Indian dishes are confirmed.Additionally, to treat cancer (Brundha and Pathmashri, 2019). It has been demonstrated that diet, particularly beetroot-based food, significantly affects hemoglobin value. Medical examinations also indicate that consuming a good diet enhances a patient's health in a variety of ways (Varshini, Rani, and Brundha, 2020; Timothy, Samyuktha, and Brundha, 2019).

2.5 key challenges of traditional foods

It was discovered that indigenous and traditional foods and food systems were disappearing, posing a serious threat to regional and global security as well as personal health (Kuhnlein, 2003). According to Diaz (2005), the substitution of non-traditional foods resulted in the loss of traditional knowledge about food production as well as the production of non-traditional, culturally acceptable cuisine.

Scientific studies on the frequency of dangers in this specific food group are scarce, which makes it challenging to conduct risk assessments or profiling studies based on science. This review addresses the potential microbiological dangers connected with the intake of the most popular traditional animal and plant diets in North Africa, as well as the issues they raise with food safety. It does this by providing a brief description of the technologies behind these foods.

Food technology has a long history in North African nations, where traditional cuisines derived from plants or animals are still widely enjoyed and consumed. In actuality, these crops are crucial to the economies and food security of these nations. Nonetheless, the majority of them are still made in unhygienic homes and sold unofficially. As a result, they are not subject to official control as per national regulatory criteria. Because of this, it is believed that their intake could be harmful to the public's health. However, because there are insufficient epidemiological data, consumption patterns, and monitoring programs, this danger has never been properly evaluated.

Worldwide, the current dietary habits have a negative impact on people's health. However, the farming techniques and procedures used in the food businesses today result in trash that is rich in nutrients and underutilized, as well as environmental exploitation.(Yash Raj Rastogi *et al.* 2022) As the market for dietary supplements grows more international, many of the scientific and regulatory obstacles that arise in studies on the efficacy, safety, and quality of these products are universal. In addition to providing a case study of research conducted at the Office of Dietary Supplements at the National Institutes of Health in the United States, this article describes some of the issues facing supplement science and offers resources that the office has built that are accessible to all scientists. It provides information for anyone who want to learn more about them as well as illustrations of some of the regulatory difficulties encountered. (Johanna T Dwyer *et al.* Nutrients. 2018)

The main source of nutrients that we need to stay healthy and nourished is food. A food-based strategy is needed to slow the rate of increase in non-communicable diseases (NCDs), as poor and unhealthy diets have been linked to the rise in these illnesses. Over the past three decades, the science and traditional knowledge underlying the health advantages of food have become apparent. Active components, bioactive compounds, and commonly used herbs have all been clinically studied and shown to provide positive results. Regulations are made more complex in the Indian

context by the variety of food products, including those in therapeutic forms like health supplements that contain plants, herbs, or unusual chemicals. Numerous constituents in this mixture possess pharmacological activity and may potentially conflict with pharmaceutical laws.(Sesikeran Boindala *et al*. 2019)

2.6 Future scope of traditional foods

According to Ramesh (2006), the primary obstacle facing the traditional food sector was the design of machinery due to insufficient data on the engineering qualities of traditional foods. According to reports, one of the main issues with traditional culinary sector (Chaudhry, 2006).
Over the following ten years, one out of every seven dollars would be spent on ethnic food, according to Hollingsworth (2000). Additionally, the author anticipated that food producers would fight for market dominance in the ethnic foods like Thai, Caribbean, Mediterranean, and Indian are expanding at a faster rate. Parpia (2004) states that approximately 75% of the processed foods available in the Indian market are traditional processed foods. Traditional cuisine is becoming more and more of an export since it is now seen as a competitive product with special ingredients and manufacturing methods (Shin, 2004).

According to Ohiokpehai (2003), women's traditional food knowledge could be utilized to enhance nutrition security. Even though indigenous people's traditional diets were rich in micronutrients, public health promotion initiatives regarding health education initiatives, this data was rarely utilised since it lacked scientific validation (Kuhnlein, 2003).

The Indian traditional food market has expanded rapidly over the past five to eight years, and given the potential of these items for both domestic consumption and export, large-scale manufacturing and preservation of traditional foods have become imperative and the attention that international corporations paid (Dipali and Rodrigues, 2006).

The field of nanotechnology is a rapidly developing field with immense potential spanning across various industries such as mechanics, medicine, and food. According to Bott, Stormer, and Franz (2014), food pathogens that serve as markers of food safety and quality can also be found using this method. Nutritional supplements, food processing, and the nanoencapsulation of food (nano-sized) constituents.

3. MATERIALS AND METHODS

This chapter deals with the methods and tools followed in the various phases of the study and the details are presented under the following headings:

3.1. Locality of the study.
3.2. Selection of sample.
3.3. Plan of study.
3.3.1. Collection of information regarding traditional food habits in Wayanad.
3.3.2. Recording customary dishes in Wayanad.
3.3.3. Selected traditional Wayanad foods prepared.
3.3.4. To increase the nutritional content of a few traditional Wayanad district cuisines.

3.1 Locality of the study

Wayanad district of southern most tip of Deccan Plateau was purposely selected for the study. Wayanad district is presently a much beloved tourist destination district of Kerala. Its food habits have been influenced by immigrant population from all over the country. Wayanad is also known for its indigenous tribal population. The tribes of Wayanad have inhabited its forests for thousands of years, and some of their traditions live on to this day. Wayanad is often called the spice garden of the south, the land of paddy fields, and the home of the monsoons.

Table 1: Localities of the study

Sl. No	Localities selected
1.	Chembra Peak
2.	Banasura Sagar Dam
3.	Edakkal Cave
4.	Soojipara water falls
5.	Kuruva Lake
6.	Pookode Lake
7.	Karapuzha Dam

3.2 Selection of sample

Every study locality's population over 45 who was knowledgeable about traditional food preparation techniques was also chosen at random. Given that customary eating practices vary by area, religion, and caste, the chosen samples were categorized according to the communities they symbolize. 10 individuals were chosen, representing various communities such as Christians, Muslims, and Hindus.

Table 2: Distribution of respondents selected for the study

Sl. No	Hindus	Muslims	Christians	Total
1.	11	6	8	25

3.3 Plan of study

The study plan was created with the goals of the investigation in mind. The following headings were included in the study:

3.3.1. Collection of information regarding traditional food habits in Wayanad.

3.3.2. Recording customary dishes in Wayanad.

3.3.3. Selected traditional Wayanad foods prepared.

3.3.4. To increase the nutritional content of a few traditional Wayanad district cuisines.

3.3.1 Collection of information regarding the traditional food habits in Wayanad

Through the use of questionnaires that included questions about traditional meals and eating habits related with religious practices, festivals, special events, and the ingredients and preparation methods of each dish, data were gathered from the designated study locations details regarding the same.

In order to get more information on the samples' early experiences with traditional foods, various celebrations and special foods prepared for those occasions, foods they consumed while attending school, etc., interviews with the samples were also conducted. Additionally, we saw several traditional kitchen tools and appliances include the churner, mann chatti (clay pot), kal chatti (stone pot), para or bushel, kooja (earthen pot), Bharani (canister), muram, mortar and pestle, and arakallu.

3.3.2. Recording customary dishes in Wayanad.

The information on various traditional cuisines from various communities was gathered from the questionnaire and interviews; the results are listed in a table. Additionally, we obtained thorough information about the cooking techniques of a few traditional delicacies. The procedure was documented using both textual and photographic means. Through in-person interviews, knowledgeable specialists were consulted regarding the history of specific traditional cuisines as well as any modifications made to traditional food preparations. This information was gathered utilizing a time/trend line.

Table 3: Different traditional foods

Sl. No	**Different traditional food**
1.	Mulayari paayasam
2.	Needle mushroom thoran
3.	Chembur perattu
4.	Kalli thoran
5.	Kizhang puzhuk
6.	Tayar pathal
7.	Kappa biriyani
8.	Kadukka Nirachathu
9.	Honey amla
10.	Pothum kaalum
11.	Kaattu soup
12.	Mutta kuzhalappam
13.	Mathan vaduka
14.	Chundakka vaduka
15.	Churakkari
16.	Kozhi kuttan
17.	Thoramanga

18.	Koova varattiyathu
19.	Erachi ularthiyathu
20.	Chattipathiri

Out of the above foods, the following foods were selected for further study:
Table 4: Selected traditional foods

Sl.No	**Selected traditional foods**
1.	Mulayari paayasam
2.	Tayar pathal
3.	Kadukka Nirachathu
4.	Honey amla
5.	Pothum kaalum
6.	Kaattu soup
7.	Mathan vaduka
8.	Thoramanga
9.	Koova varattiyathu
10.	Chattipathiri

3.3.3. Selected traditional Wayanad foods prepared.

3.3.3.1 Mulayari paayasam

Ingredients (1 servings)

- 1/4 cup Mulayari (broken rice)
- 1 cup coconut milk
- 1/4 cup jaggery (or brown sugar)
- 1/2 tablespoon ghee (clarified butter)
- A pinch of cardamom powder
- A small handful of cashews and raisins for garnishing

Preparation:

- Rinse the Mulayari (broken rice) in water and soak it for about 30 minutes.
- In a large pan, heat ghee and roast the cashews and raisins until golden brown. Set them aside.
- In the same pan, add the soaked Mulayari and roast it for a few minutes until it turns slightly golden.
- Add the coconut milk to the pan and bring it to a boil. Then, reduce the heat and let it simmer for about 20-25 minutes until the Mulayari is cooked and the paayasam thickens.
- Meanwhile, in a separate pan, melt the jaggery with a little water to make a syrup. Strain the syrup to remove any impurities.
- Add the jaggery syrup to the cooked Mulayari and mix well. Let it simmer for another 5 minutes.
- Finally, add cardamom powder and the roasted cashews and raisins. Give it a good mix.Remove from heat and serve the Mulayari Paayasam warm or chilled.

Plate 1: Mulayari paayasam

3.3.3.2 Tayar pathal

Ingredients (1 serving)

- 1/2 cup rice flour
- 1/2 cup grated coconut
- 1/4 teaspoon cumin seeds
- Salt to taste
- Water as needed
- 1 banana leaf for steaming

Preparation:

- In a mixing bowl, combine the rice flour, grated coconut, cumin seeds, and salt.
- Gradually add water and knead the mixture into a smooth dough. The dough should be soft and pliable.
- Take a small portion of the dough and flatten it on a banana leaf, shaping it into a round disc.
- Repeat the process with the remaining dough and banana leaves.
- Steam the prepared discs in a steamer for about 10-15 minutes until they are cooked through.
- Once cooked, remove the tayar pathal from the steamer and let them cool slightly.
- Serve the tayar pathal warm.

Plate 2: Tayar pathal

3.3.3.3 Kadukka Nirachathu

Ingredients (1 servings)

- 5 fresh mussels (kadukka)
- 1 tablespoon of rice powder
- 1/4 cup grated coconut
- 1/2 teaspoon ginger-garlic paste
- 1/4 teaspoon red chili powder
- 1/8 teaspoon turmeric powder
- 1/8 teaspoon fennel seeds
- 1/8 teaspoon garam masala
- A pinch of black pepper powder
- 1/2 tablespoon lemon juice
- Salt to taste
- Coconut oil for frying

Preparation:

- Clean the mussels thoroughly and remove the shells, keeping the half-shell intact.
- In a mixing bowl, combine grated coconut, rice powder, ginger-garlic paste, red chili powder, turmeric powder, fennel seeds, garam masala, black pepper powder, lemon juice, and salt. Mix well to form a thick masala paste.
- Take each mussel shell and fill it with the prepared masala paste, pressing it gently.
- Heat coconut oil in a pan and shallow fry the stuffed mussels until they turn golden brown on both sides.
- Remove from heat and serve the Kadukka Nirachathu as an appetizer or side dish.

Plate 3: Kadukka Nirachathu

3.3.3.4 Honey Amla

Ingredients (1 servings)

- 2-3 Amla (Indian gooseberries)
- 1 tablespoon honey
- 1/4 cup water

Preparation:

- Wash the Amla thoroughly and chop them into small pieces, removing the seeds.
- In a saucepan, add water and the chopped amla pieces. Boil until the amla becomes soft.
- Once the amla is soft, mash it to a pulp-like consistency.
- Add honey to the mashed amla and mix well.
- Let the mixture cool down before serving.

Plate 4: Honey Amla

3.3.3.5 Kaattu Soup

Ingredients (1 servings)

- 100 grams of lamb or mutton
- 1 carrot, chopped
- 1 small potato, diced
- A handful of peas
- 1/4 teaspoon of pepper
- 1/4 teaspoon of cumin
- 1/4 teaspoon of coriander

Preparation:

- Start by cooking the lamb or mutton in a pot until it's tender.
- Add chopped vegetables like carrots, potatoes, and peas to the pot.
- Season the soup with spices like pepper, cumin, and coriander.
- Let the soup simmer until all the flavors blend together.

Plate 5: Kaattu Soup

3.3.3.6 Chattipathiri

Ingredients (1 serving)

- 1 crepe
- 1 egg
- 50 grams of chicken, cooked and shredded
- 1/4 onion, finely chopped
- 1/2 teaspoon of ginger, grated
- 1 clove of garlic, minced
- 1 green chili, finely chopped (adjust according to your spice preference)
- 1/4 teaspoon of turmeric
- 1/4 teaspoon of garam masala
- 1/4 teaspoon of coriander powder
- 2 cashews, chopped
- 1 tablespoon of raisins
- 1/2 tablespoon of ghee

Preparation

- Cook the chicken with spices until tender, then shred it.
- Sauté onions, ginger, garlic, and green chilies in ghee, then add the shredded chicken, cashews, and raisins.
- In a separate bowl, beat eggs and keep aside.
- In a baking dish, layer crepes, chicken mixture, and beaten eggs alternately.
- Repeat the layers and finish with a crepe layer on top.
- Bake in a preheated oven until the eggs are set and the top is golden brown.Slice and serve the Chattipathiri

Plate 6: Chattipathiri

3.3.3.7 Thoramanga

Ingredients (1 servings)

- 1 raw mango
- 1/2 cup grated coconut
- 1 green chili (adjust according to your spice preference)
- 1/2 teaspoon mustard seeds
- A pinch of asafoetida
- Salt to taste
- Water

Preparation:

- Peel the mango and grate them.
- In a mixing bowl, combine the grated mango, grated coconut, chopped green chilies, and salt.
- In a small pan, heat some oil and add mustard seeds. Let them splutter.
- Add asafoetida to the pan and pour this tempering over the mango-coconut mixture.
- Mix everything well and add water if needed to adjust the consistency.

Plate 7: Thoramanga

3.3.3.8 Mathan Vaduka

Ingredients (1 servings)

- 100 grams of Mathan (pumpkin)
- 1/4 cup of grated coconut
- 1/2 teaspoon of red chili powder
- 1/4 teaspoon of turmeric powder
- 1/4 teaspoon of cumin seeds
- A few curry leaves
- Salt to taste
- Oil for frying

Preparation:

- Peel the Mathan and cut it into small cubes.
- In a mixing bowl, combine the grated coconut, red chili powder, turmeric powder, cumin seeds, curry leaves, and salt.
- Add the Mathan cubes to the bowl and mix everything well, ensuring that the Mathan is coated with the spice mixture.
- Heat oil in a pan and fry the Mathan cubes until they turn golden brown and crispy.
- Remove the fried Mathan from the pan and place them on a paper towel to absorb any excess oil.

Plate 8: Mathan Vaduka

3.3.3.9 Koova Varattiyathu

Ingredients (1 servings)

- 1/4 cup of arrowroot powder (koova podi)
- 2 tablespoons of grated coconut
- 1 green chili, chopped
- 1/4 teaspoon of mustard seeds
- A pinch of asafoetida
- A few curry leaves
- Salt to taste
- Oil for frying

Preparation:

- In a bowl, mix the arrowroot powder with water to make a smooth paste. Set it aside.
- Heat oil in a pan and add mustard seeds. Let them splutter.
- Add asafoetida, curry leaves, and chopped green chilies to the pan.Add the grated coconut and sauté it until it turns golden brown.
- Now, add the arrowroot paste to the pan and mix it well with the coconut mixture.
- Keep stirring the mixture on low heat until it thickens and forms a dough-like consistency.
- Remove the mixture from the heat and let it cool slightly.
- Take small portions of the mixture and shape them into small balls or any desired shape.
- Heat oil in a pan for frying and deep fry the shaped mixture until they turn crispy and golden brown.
- Remove the fried Koova Varattiyathu from the pan and place them on a paper towel to remove excess oil.

Plate 9: Koova Varattiyathu

3.3.3.10 Pothum kaalum

Ingredients (1 servings)

- 2-3 bone marrow pieces
- 1/2 onion, finely chopped
- 1 tomato, pureed
- 1 green chili, slit
- 1 tablespoon ginger-garlic paste
- 1 teaspoon turmeric powder
- 2 teaspoons red chili powder
- 1 tablespoon coriander powder
- 1 teaspoon garam masala
- A few curry leaves
- Salt to taste
- Coconut oil for cooking

Preparations:

- Heat coconut oil in a pan and add the chopped onions. Sauté until golden brown.
- Add the ginger-garlic paste and green chilies. Cook for a minute until fragrant.
- Add the tomato puree and cook until the oil separates.Add the turmeric powder, red chili powder, and coriander powder. Mix well.
- Add the bone marrow pieces and coat them with the masala. Cook for 5 minutes.
- Add enough water to cover the bone marrow. Cover and simmer until the marrow is cooked and tender.
- Sprinkle garam masala and curry leaves. Give it a final mix.

Plate 10: Pothum kaalum

3.3.4. To increase the nutritional content of a few traditional Wayanad district cuisines.

The nutrients that we are selected for analyzing the nutritive value for each recipe are based on the high nutritive content present in that recipe; which include: Energy, protein, fat, carbohydrates, iron, calcium, phosphorus, potassium, magnesium, sodium, zinc.

ENERGY

The capacity to work or generate heat is called energy. When discussing nutrition, it's used to describe the energy that comes from food and drink, which our bodies utilize for breathing, blood circulation, and muscular movement, among other functions. Our muscle and liver cells store energy created in the mitochondria of the cell, which is then easily accessible as glycogen. The body stores the energy from food digestion as adenosine triphosphate (ATP), a high-energy molecule. Another name for ATP is energy currency.

CARBOHYDRATE

The body uses carbohydrates as its primary energy source. These are the carbohydrates, dietary fiber, and sugars found in plant-based diets and dairy products. Sugar molecules make up carbohydrates, or carbs. Carbohydrates are one of the three primary nutrients present in foods and beverages, along with proteins and fats. Glucose is produced by your body from the breakdown of carbs. The primary energy source for the cells, tissues, and organs in your body is glucose, sometimes known as blood sugar. Glucose can be utilized right away or saved for later use in the muscles and liver. Most recommendations state that an individual should get 45–65% of their daily energy from carbs.

PROTEIN

Your body needs protein to function properly and to build and repair cells. There are many different foods that contain protein, so it's critical that you get enough of it each day. Foods high in protein come from both plant and animal sources, including dairy, eggs, and meat and fish. Legumes such as beans and lentils, seeds, and nuts. Amino acids are the building blocks that make up proteins. Approximately twenty distinct amino acids can be linked together in various ways. They are used by your body to create new proteins, including bone and muscle, as well as other substances like hormones and enzymes. They can also serve as a source of energy for it.

FAT

Essential fatty acids, which the body is unable to produce on its own, are found in fat. The body absorbs vitamins A, D, and E more readily when fat is present. Because these vitamins are fat-soluble, lipids are the only substance that can assist them absorb. Any fat that your body's cells don't use or bodily fat that is transformed into energy. Proteins and carbs that aren't used up are likewise turned into body fat. Every kind of fat has a lot of energy. Regardless of its type, one gram of fat offers 9 kcal (37 kJ) of energy, while one gram of protein and carbohydrates only contribute 4 kcal (17 kJ).

CALCIUM

Although it also has a significant impact on blood clotting, muscular contraction, normal cardiac rhythms, and nerve function, calcium is most commonly linked to strong bones and teeth. The body stores 99% of its calcium in the bones, and the remaining 1% is present in various tissues such as muscle and blood. The recommended daily allowance (RDA) for calcium is 1,000 mg for women aged 19 to 50 and 1,200 mg for women aged 51 and beyond. The RDA for women who are pregnant or nursing is 1,000 mg. The RDA is 1,000 mg for men aged 19 to 70 and 1,200 mg for men aged 71 and beyond.

POTASSIUM

One mineral you can get in food is potassium. It is an electrolyte as well. Electrical impulses are carried throughout the body by electrolytes. The kidneys, heart, muscles, and the nervous system's ability to transmit messages are all impacted by potassium. According to the U.S. Dietary Reference Intakes, there is insufficient data to determine a potassium Recommended Dietary Allowance (RDA). The daily AI for women aged 14 to 18 is 2,300 mg, and for women aged 19 and above, it is 2,600 mg. Depending on age, the AI for women who are pregnant or nursing ranges from 2,500 to 2,900. The AI is 3,000 mg for men ages 14 to 18 and 3,400 mg for men ages 19 and above. Adults are thought to consume around of potassium on a daily average.In women, 2,320 mg, and in men, 3,016 mg.

MAGNESIUM

Magnesium is a mineral that is plentiful in the body. It can be found in many foods naturally, as an addition to other food products, as a dietary supplement, and in some medications (including laxatives and antacids). The processes of glycolysis, oxidative phosphorylation, and energy production all require magnesium. It helps build bone structure and is necessary for the creation of DNA, RNA, and glutathione, an antioxidant. For individuals aged 19 to 51 and over, the Recommended Dietary Allowance (RDA) is 400–420 mg for men and 310–320 mg for women

per day. About 350–360 mg per day are needed for pregnancy, while 310–320 mg are needed for lactation.

SODIUM

Approximately 40% sodium and 60% chloride make up salt, also referred to as sodium chloride. It adds taste to meals and serves as a stabilizer and binder. Because bacteria cannot survive in an environment with high salt content, it also serves as a food preservative. To conduct nerve impulses, contract and relax muscles, and maintain the ideal balance of water and minerals, the human body needs a tiny quantity of sodium. We are thought to require 500 mg of sodium every day for these essential processes. The lowest levels of sodium consumption found in randomized controlled trials that did not reveal a shortfall but yet permitted an acceptable intake of nutrient-dense foods were utilized to produce guidelines for appropriate intakes (AI) of sodium.The AI is 1,500 milligrams per day for men and women who are 14 years of age and older, as well as pregnant women.

ZINC

Although the body only requires minute amounts of zinc, nearly 100 enzymes depend on it to carry out essential chemical reactions. It has a significant role in DNA synthesis, cell division, protein synthesis, tissue repair, and immune system maintenance. For individuals 19 years of age and older, the Recommended Dietary Allowance (RDA) is 11 mg for males and 8 mg for women per day. A little bit more is needed during pregnancy and nursing, at 11 and 12 mg, respectively. The highest daily intake that is unlikely to have a negative impact on health is known as the Tolerable Upper Intake Level, or UL. Every male and female who is 19 years of age or older has a daily zinc intake of 40 milligrams.

IRON

The mineral iron can be found as a nutritional supplement, added to some food products, and found naturally in a variety of foods. Hemoglobin, a protein found in erythrocytes (red blood cells) that carries oxygen from the lungs to the tissues, requires iron as a necessary component. Heme and nonheme are the two primary types of dietary iron. Meat, seafood, and poultry contain both heme and nonheme iron, but plants and foods fortified with iron exclusively contain nonheme iron. In western populations, heme iron—which is created when iron and protoporphyrin IX combine—makes up 10% to 15% of total iron consumption. For men over the age of 18, 8.7 mg of iron is required daily; for women, the recommended daily intake is 14.8 mg. For women over 50, 8.7 mg per day.

PHOSPHORUS

The mineral phosphorus accounts for one percent of an individual's total body weight. In the body, it is the second most prevalent mineral. Every every cell in the body contains it. The bones and teeth contain the majority of the phosphorus in the body. It is crucial to the way the body metabolizes fats and carbs. The body needs to produce protein in order for cells and tissues to grow, maintain, and repair. In addition, phosphorus aids in the synthesis of ATP, a chemical the body uses as a reserve of energy. The recommended daily allowance (UL) for phosphorus is 4,000 mg for adult males and women aged 19 to 70, and 3,000 mg for those over the age of 71. The UL for expectant mothers, 3,500 mg for nursing women and 4,000 mg for women aged 14 to 50, respectively.

4. RESULTS AND DISCUSSION

Results of the present study on "Documentation and nutritive evaluation of traditional foods of Kerala-Wayanad district" are presented in this chapter under the following headings:

4.1 Traditional food habits of different communities
4.1.1 preference of traditional foods of different communities
4.1.2 Reasons for preference of traditional foods
4.1.3 Frequency of preparation of traditional food items
4.1.4 Frequency of preparation of traditional health foods
4.1.5 Traditional food items prepared on special occasions
4.1.6 Traditional kitchen utensils
4.2 Nutritive value calculation of traditional food items collected

4.1 Traditional food habits of different communities

The respondents from various communities were questioned about their traditional eating habits, including whether they preferred traditional meals, why they preferred them, how often they cooked them, whether they prepared them for special occasions, and whether they followed religious celebrations and customs, how often traditional health meals are prepared, and specifics about the tools and equipment used in traditional kitchens.

4.1.1 preference of traditional foods of different communities

The details regarding the preference for traditional foods among different communities are given in the Table 5

Communities (n)	**Preferred**	**Not preferred**
Hindus (12)	8(66.6)	4(33.3)
Christian (8)	5(62.5)	3(37.5)
Muslim (5)	100	–

Numbers in parenthesis are percentage.

It was found that all respondents of Muslims were preferred the traditional foods and only [66.6] percentage of Hindu preferred traditional foods and only [62.5] percentage of Christian preferred these types of traditional foods.

4.1.2 Reasons for preference of traditional foods

The details regarding the reasons for preference of traditional foods among different communities are given in Table 6.

Table 6: Reasons for preference of traditional foods

Reason	**Hindus (12)**	**Christians (8)**	**Muslims (5)**
Healthy	12(100)	8(100)	5(100)
Tasty	9(75)	8(100)	4(80)
No adulteration	5(41.6)	6(75)	4(80)
Less expensive	–	1(12.5)	1(20)
Ingredients are locally produced	3(25)	–	1(20)

Number in parenthesis are percentage.

Due to their superior health, traditional foods were favored by all respondents, who are Christians and Hindus respectively. Because of their flavor and health advantages, traditional foods are favored by all Muslim respondents. Because of its flavor, 75% of Hindus and 80% of Christians preferred it. 41.6% of the Traditional meals were chosen by Hindus, 75% of Christians, and 80% of Muslims because they were free of adulteration. For 12.5% of Christians and 20% of Muslims, traditional food was preferred because it was less expensive. 20% of Muslimss and 25% of Hindus say they favor it because the ingredients are readily available in their area.

According to the report, all Muslim respondents who gave preference to traditional foods said they did so because of the health benefits, and all Hindus said they did so because traditional foods are delicious. The majority of those surveyed who said they liked traditional dishes said they liked them since they aren't tampered with.

In a research with 227 respondents, it was found that 62.11 and 52.42% of respondents thought traditional meals were good and healthful, while 69.16 and 12.78% said they favored traditional foods because of their affordability and unadulterated purity.

4.1.3 Frequency of preparation of traditional food items

The frequency of preparation of different traditional foods by the different communities for breakfast, lunch and snacks are given in Table 7

Table 7: frequency of preparation of traditional foods

Frequency	**Hindus (8)**	**Christians (5)**	**Muslims (5)**
Daily	5 (62.5%)	3 (60%)	5 (100%)
Weekly thrice	1 (12.5%)	2 (40.3%)	0
Weekly twice	2 (25%)	0	0

Numbers in parenthesis are percentage.

According to the table, 62.5% of Hindus cooked traditional foods every day, 12.5% of Hindus did so three times a week, and 25% of Hindus did so twice a week. Of the Christians who said they enjoyed traditional cuisine, 60% made them every day, and 40% made them three times a week. Every Muslim who enjoyed traditional cuisine also cooked and consumed them on a daily basis.

4.1.4 Frequency of preparation of traditional health foods

The frequency of preparation of traditional health foods by the respondents who preferred traditional food items was found to be as follows:

Table 8: Frequency of preparation of traditional health foods.

Frequency	**Hindus (8)**	**Christians (5)**	**Muslims (5)**
Occasionally	4 (50%)	1 (20%)	2 (40%)
Never	4 (50%)	4 (80%)	3 (60%)

Numbers in parenthesis are percentage.

It is clear from the table that half of the Hindus who said they preferred traditional foods were found to occasionally prepare traditional health foods, whereas the other half never did. Similarly,

20% of Christians who favored traditional foods occasionally made them and 80% didn't cook any conventionally healthy meals. 40% of Muslims who favored eating traditional meals prepared them on occasion, and the other 60% never did.

4.1.5 Traditional food items prepared on special occasions.

Traditional foods prepared during special occasions by different communities are detailed in Tables 9 to 11.

4.1.5.1 Muslims

The details of traditional foods prepared by the Muslim community on special occasions are presented in Table 9.

Table 9. Traditional foods prepared by Muslims on special occasions

Occasionally	**Items**
Marriage	Pahari, neichoru, briyani, meat preparations
5th and 7th day of demise	Kurry kurukkal
40th day of demise	Ghee rice and beef curry
Birthday	Meals with non vegetarian items
Noyambu thura	Kuzhal pathiri, unnakkaya, niracha pathiri, ghee rice, biryani
Ramadan	Pathiri, ghee rice, briyani
Muharram	Pathiri , ghee rice, briyani, wheat verakiyathu

The Muslim community placed a high value on a range of foods at wedding-related events. Traditionally, dishes like neichoru, pathiri, beef curry or any other meat preparation, and biriyani were served to guests during a marriage feast. At the time of Puthiyapla Salkkaram a range of dishes were prepared in the bride's home to treat the puthiyapla (bride groom), including unnakkaya, pazham nirachathu, mutta mala, mutta surukka, mutta marichathu, kozhi nirachathu, valayappam, tharippola, pinjanathappam, kalathappam, and various kinds of pathiri.

On the 40th day of the birth of a child, the Muslim community removed their baby's hair completely and, on this day, raw was distributed to close relatives. Birthdays were celebrated only in high income families. On those days, meat preparations were included along with the major meals of the day. When a family member passed away, kanji, or cooked rice, was served with one or two vegetarian curries. Kurry kurukkuka, a unique porridge made with uncooked rice flour and jaggery syrup, was made on the seventh or fifteenth day of death. Ghee rice and beef curry were made on the fortieth day and given to the family members.

Some of the common traditional foods during Noyambu thura, the breaking of the religious fast performed in the evening during the month of Ramadan, including jeeraka kanji, thari kanji, kuzhal pathiri, unnakkaya, niracha pathiri, aleesa, and kalathappam. cooked and presented. Every home planned a lavish feast on the day of Ramadan (perunnal), a religious holiday observed by Muslims. The main dishes prepared were pathiri, neichoru, and biriyani. As side dishes, there was also mutton or beef curry. A selection of fried nibbles were cooked and shared on this occasion among friends, family, and neighbour's. Wheat verakiyathu and paalayikkappam were served to mark Muharram.

4.1.5.2 Christians

The details of traditional foods prepared by the Christian community on special occasions are presented in Table 10.

Table 10. Traditional food items prepared by Christians on special occasions

Occasionally	**Items**
Marriage, Betrothal, Birthday, Baptism, Holy communion	Beef stew, beef ularthiyathu, pulissery, neichoru, fish molly, vindaloo, mappas, briyani, paachoru
Death	Vegetarian meals, kanji
7th day after demise	Vegetable stew, appam, steamed banana
40th day after demise Annual remembrance day	Beef ularthiyathu, meen pattichathu, chicken mappas
Easter	Appam, beef stew, beef cutlet, meen pattichathu, beef ularthiyathu, pulissery

Christmas	Appam, beef stew, thaaraavu mappas, fish molly
25th day of religious ‘vratha’	Inderiyappam
40th day of religious ‘vratha'	Paachoru
Festivals related to church (perunnal)	Appam , beef stew

Paachoru was served first at the betrothal function, then appam and stew. Later on, all the non-vegetarian meals from a typical Christian sadya were served. A pork curry and a traditional dish called paachoru were offered for breakfast on the day of the marriage. Low-income families provided meat ularthiyathu and kanji. Serving paachoru with avilosu podi, achappam, and kuzhalappam was also typical among Christian community on the eve of marriage. On other occasions, such as betrothal and marriage, achappam, kuzhalappam, vattayappam, vellayappam, avilosu podi, and avilosunda were also prepared for visitors to be served.

During the death of a family member, kanji was prepared and served to the family members and relatives. On the 7th day of demise, a mediocre vegetarian sadya was served for the close 50 relatives. Christian communities prepared only vegetarian dishes until the 40th day of demise and they avoided curd, ghee, milk, egg, buttermilk and liquor till the 40th day. On the 40th day, a typical traditional non vegetarian Christian sadya was given to the relatives. For the annual Remembrance Day also a traditional non vegetarian sadya was prepared.

For Osana Perunnal and Palm Sunday, there were unique foods like kozhukkatta or peecham pidi. On Monday Thursday, a dish called paalu kurukku—rice flour, jaggery, and sugar was made. Good Friday was known for making pesaha kurukku, a similar delicacy without sugar. On Easter Sunday, appam and vattayappam were made. Vattayappam, muttayappam, vettappam, etc. for Christmas were prepared at home, and a non-vegetarian feast was planned for Christmas Day. Before Christmas, people observed the twenty-fifth day of the holy fast, known as ambathu noyambu, which was particularly notable for the production of inderiyappam. It was a specialty dish made of rice flour, coconut, and seasonings. This religious vratha's fortyth day saw the preparation of chakkara paachoru. Church-related festivals were observed by cooking a wide range of foods, including vettappam, achappam, kuzhalappam, thamukku, velichenna appam, and kaliyadakka.

4.1.5.3 Hindus

The details of traditional foods prepared by the Hindu community on special occasions are presented in Table 11.

Table 11. Traditional food items prepared by Hindus on special occasions.

Occasion	**Items**
Marriage,Peridal, Birthday,chorunnu	Sadya
Adiyantharam	Adiyanthira sadya
Shradham	Shradha kanji, shradha puzhukku
Onam	Sadya, Ada, varuthupperi
Vishu	Sadya, Vishu kanji, Vishu katta
Karkkidakam	Navadhanyakanji, cheeda thavidu ada
Karkkidaka vavu	Ada
Uthradam	Ada, non vegetarian meals
Navarathri	Aval, malar,ada
Ekadasi	Gothambu kanji, chama kanji
Thiruvathira	Koovakurukku, ettangadi puzhukku
Karthika	Appam, ada
Temple festival	Unniyappam, murukku, kinnathappam, avilosu podi

The Ezhava community prepared sadya for marriage, peridal, choroonu, and birthdays. The main ingredients were rice, pulinkary, kutherissery, erupuli, olan, injipuli, and pickle. Following cremation, the family was given black tea, or kanji, which had been made at a nearby house. During the dying process, fasting was followed. Adiyanthiram, which avoided papadam, plantains, and payasam, was performed with sadya on the sixteenth day following the loss of a family member.

To celebrate Kerala's prime festival Onam, Kerala Brahmins made ada as an offering to thrikkakkarayappan, a God of the Hindu mythology. Rice flakes, karolappam, puffed rice, banana, kadali pazham etc. were also kept as naivedyam for the God and later all these items were distributed among family members. From Atham onwards, sadya, the traditional feast was prepared with the most elaborate sadya on the day of thiruvonam. During the month of Karkkidakam, Ezhava community prepared tamarind seed unda, jack fruit seed chuttathu, mango kernel flour ada, njavara kanji and marunnu kanji. Vishu was celebrated by preparing either Vishu kanji or Vishu puzhukku in which the major ingredient was jack fruit. Sadya was served for lunch on the day of Vishu.

To celebrate Karthika, they prepare ada and appam as the special traditional items. To commemorate Vishu, people would make Vishu puzhukku or kanji, both of which had jack fruit as a main ingredient. Lunch was served on the day of Vishu to Sadya. They make appam and ada as special traditional foods to celebrate Karthika.

To commemorate Vishu, people would make Vishu puzhukku or kanji, both of which had jack fruit as a main ingredient. Sadya was served for lunch on the day of vishu they make appam and ada as special traditional foods to celebrate Karthika.

4.6.1 Traditional kitchen utensils

The information gathered on the traditional household utensils and equipment used were collected and the list is presented in table 12. It was observed that the households used a variety of traditional kitchen tools, including churners, bharanis, ammikallu, koojas, etc.

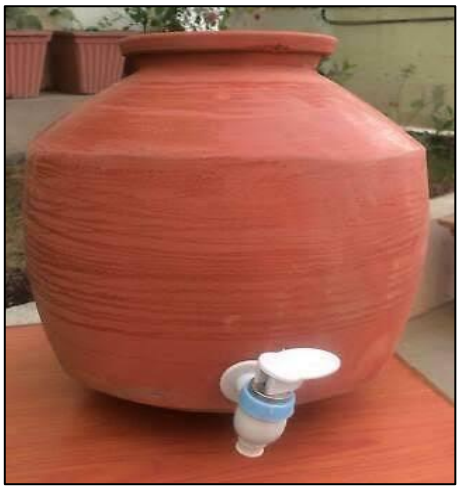

Plate 11: Traditional kitchen utensils

Table 12. List of traditional kitchen utensils and equipment

Sl. No	Utensils and equipment	Purpose of use
1.	Kooja	For cooling water
2.	Chirata thavi	used for cooking and serving liquid foods.
3.	Mathu	Used to grind spices and herbs
4.	Muram	For grading, sorting and cleaning
5.	Kal chatti	For preparing curries
6.	Ammikallu	Used for grinding wet masalas
7.	Bharani	For storage and fermentation
8.	Churner	For churning
9.	Ulaka	Used to thresh grains
10.	Uruli	Used for cooking large scale chips

4.2 Nutritive value calculation of the traditional foods collected

Table 13. Nutritive value calculation of traditional food

Sl. no	Name Of The Food	Energy (Kcal)	CHO (g)	Protein (g)	Fat (g)	Ca (mg)	K (mg)	P (mg)	Zn (mg)	Fe (mg)
1	Mulayari payasam	1565.01	131.13	15.11	108.07	108.98	435	467.99	1.27	7.28
2	Tayar pathal	470.58	61.51	9.75	20.27	184.48	575	201.49	1.85	5.14
3	Kadukka	340.67	18.85	31.01	14.78	93.82	984.8	517.88	4.22	10.28
4	Honey amla	285.39	70.33	0.69	0.15	1.05	–	3.36	–	0.15
5	Kaattu soup	268.78	14.94	20.29	13.58	178.73	860.4	209.95	0.15	2.85
6	Chattipathiri	714.57	96.98	31.82	21.21	65.04	474.05	360.2	2.32	3.75
7	Thoramanga	237.07	18.41	1.54	16.55	43.7	318.9	49.47	0.23	0.56
8	Mathan vaduka	104.97	5.26	0.77	8.28	24.66	302.2	35.73	0.12	0.26
9	Koova varattiyathu	141.09	25.56	0.44	4.17	3.8	30.6	12.77	0.06	0.43
10	Pothum kaalum	372.75	9.81	47.53	15.47	39.6	1140	477.16	6.9	5.05

Macro and micronutrients of ten different traditional foods.

Mulayari payasam has the highest calorie (1565.01 kcal) and Mathan vaduka has the lowest calorie content (104.97 kcal). Among these foods, all foods include an adequate amount of carbs, however mulayari payasam the greatest (131.13g) and the lowest one is mathan vaduka and poothum kaalum.

Highest protein content is noticed in poothumkaalum (47.53g) and the lowest of these are in koovarattiyathu and honey amla. As there are more of non-vegetable food items that we selected; so that all food items are selected have enough amount of fat content present in it. Among these traditional foods the lowest fat content present in honey amla and (0.15 g) and the highest is in mulayari payasam (108.07g).

Most traditional foods contain a high amount of calcium. Tayar pathal contained highest amount of it. i.e. (184.48 mg). Honey amla contained the lowest amount (1.05 mg). Potassium content is assessed only in food items that contain more of potassium. Highest amount of potassium present in Poothumkaalum (1140 mg) and Kadukka also had a high amount of potassium (984.8 mg). The lowest amount among this is present in koovarattiyathu (30.6 mg).

Phosphorus content is mostly present in the kadukka (517.88 mg) and the lowest amount of it in Honey amla (3.36 mg). The amount of zinc present in kadukka is (4.22mg). Another micronutrient iron that is mostly present among this food is in mulayari payasam (7.28 mg). The lower amount is noticed in the honey amla (0.15 mg).

Other traditional foods ranged in sodium concentration from 0.016 to 9.49 mg per 100 g, according to a study by Aneena (2009). Traditional diets ranged in potassium content from 0 to 566.71 mg 100g-1.

5. Summary and Conclusion

The current project, "Documentation and Nutritive Evaluation of Traditional Foods of Kerala – Wayanad District," was started with the intention of locating and gathering data on the customs and dietary practices of each group.Connected to religious practices, holidays, celebrations, and the components and techniques of preparation. The district of Wayanad was chosen for the research. As the current tourist destination area of Kerala, Wayanad district offers a distinct culinary expertise, with the tastiest range of food that is still loved by people throughout the world. Wayanad is known as "the land of paddy field." In order to gather the necessary data, a random selection of people over 45 who were knowledgeable about traditional meal preparations were made from each study location details. The respondents were divided up into Christian, Muslim, and Hindu communities.

It was discovered that whereas only (66.6) percent of Hindus and (62.5) percent of Christians indicated a preference for traditional meals, all respondents who identified as Muslims did. Respondents who identify as Hindu and Christian because traditional meals were healthier, communities favored them. Because of their flavor and health advantages, traditional foods were favored by all Muslim respondents. Because of their flavor, these items were favored by 80% of Muslims and 75% of Hindus. Traditional meals were chosen by 41.6% of Hindus, 75% of Christians, and 80% of Muslims because they were free of adulteration. For 20% of Muslims and 12.5% of Christians, traditional food was preferred because it was less costly. Because of the components, 25% of Hindus and 20% of Muslims prefer it. Following data collection regarding the frequency of traditional meal preparation, it was discovered that 62.5% of Hindus made traditional foods every day, 12.5% of Hindus did so three times a week, and 25% of Hindus did so twice a week. 60% of Christians said they were more comfortable with traditional 40% of the dishes prepared were traditional cuisine, prepared three times a week. Every Hindu who favored traditional cuisine cooked and ate traditional foods on a daily basis. Additionally, it was discovered that 50% of the Hindus who said they loved traditional foods also prepared traditional health foods on occasion, and the other 50% never did. In the same way, just 20% of Christians who favored traditional foods occasionally made them, and 80% did not make any traditional health foods. Forty percent of Hindus who favored eating traditional meals occasionally made traditional health foods, and the other 60% never made any preparations.

Since traditional eating customs were highly varied and these foods had a close relationship to religious and cultural traditions, it was also necessary to examine the eating habits of various populations on holidays, festivals, and ceremonies. The significant customary foods of Muslims on special events included pinjanathappam, neichoru, beef curry kalathappam, pazham nirachathu, mutta mala, mutta surukka, mutta nirachathu, kozhi nirachathu, valayappam, tharippola, pinjanathappam, and many kinds of pathiri. Hindus traditionally consumed sadya, Vishu kanji, cheeda, ada, aval, unniyappam, murukku, and Vishu katta on special occasions. Traditionally,

Christians would eat appam, beef stew, mappas, fish molly, vindaloo, paachoru, and beef ularthiyathu on special occasions.

These foods' nutritional values were also computed. It was discovered that of these foods, Mathan vaduka (104.97 kcal) had the fewest calories and Mulayari payasam (1565.01 kcal) had the most. Mulayari payasam had the highest amount of carbohydrates (131.13 g). The foods with the fewest carbs were mathan vaduka and poothum kaalum. Protein content ranged from the highest in poothum kaalum(47.53 g) to the lowest in koova varattiyathu and honey amla. Honey amla had the lowest fat content (0.15 g), while mulayari payasam had the highest (108.07 g). The maximum concentration of phosphorus (517.88 mg) was found in Kadukka, while the lowest concentration (3.36 mg) was found in honey amla. The quantity of zinc that is there are 4.22 milligrams of zinc in Kadukka. Mulayari payasam had the highest concentration of iron (7.28 mg). Honey amla showed a lower level (0.15 mg).

Consequently, it can be said that even while Wayand is home to a vast array of traditional foods, many of them are changing with time. The customary eating habits and patterns underwent changes and transitions. In the current investigation, the records of traditional meals was carried out with the intention of preventing these things from becoming extinct. Future research could be done to record, reproduce, and publicize Wayand's traditional dishes.

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APPENDIX

Questionnaire for Traditional Recipe

1. Name:

2. Age: 3. Sex: Male/ Female

4. Mostly used traditional preparations for breakfast?

…….

5. Mostly used food item for lunch/ dinner?

……

6. What are the snack that were used during your childhood?

……

7. What is the traditional recipe that you know or followed till now?
Snack/ Beverage/Others

8. How to prepare it?

……

……

……

9. Traditional food item used for special occasions?

……

10. Do you use any traditional food items for health care?

Yes/No

11. If yes, what is it? …….

12. How often do you prepare traditional healthy food?
(Occasionally/Never)

13. How do you keep seasonal food for long period without getting spoilage?

……..

14. What were the different dry products used for lunch/dinner?
(papads/vattals/vadakams/kondattams/others)

15. Do you make it from home?

Yes/ No

16. Do you had any traditional kitchen utensils/equipment's now?

…….

17. Are you using it now? If no, give reason.

……

18. Which type of food do you prefer mostly?
(Traditional/Non traditional)

19. Major reasons for preferring traditional food?
(Healthy/Tasty/No adulteration/Less expensive/Ingredients are locally produced)

20. How often do you prepare the traditional food?

(Daily/Weekly thrice/Weekly twice)