# DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – THRISSUR DISTRICT

PROJECT SUBMITTED

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

B.Sc. NUTRITION AND DIETETICS

BY

**NAHALA TM**

**Register No - SB20ND015**

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

APRIL 2023

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CERTIFIED AS BONAFIDE RESEARCH WORK

Signature of the Internal Examiner

Signature of the External Examiner

# DECLARATION

I hereby declare that the project entitled **"DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA - THRISSUR 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 **Dr. Soumya P.S,**, 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: Thrissur Nahala T.M

Date: 18/04/2023

# CERTIFICATE

I hereby certify that the project entitled "**DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – THRISSUR 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. Nahala T.M**, during the period of the study under my guidance and supervision.

**Signature of the HOD**

Ms. Surya M. Kottaram

Head of the Department

Department of Clinical Nutrition and Dietetics

St. Teresa's College (Autonomous)

Ernakulam

**Signature of the Research Guide with designation**

Dr. Soumya P.S

Assistant Professor

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NAHALA T.M

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# 1. INTRODUCTION

**"Food is not simply organic fuel to keep body and soul together, it is a perishable art that must be savored at the peak of perfection."**

**– E.A. Bucchianeri**

Food is a culture, emotion, hospitality, prestige and power and is closely knitted with tradition. Traditional knowledge is a community based functional knowledge system, developed, preserved and refined by generations through continuous interaction, observation and experimentation with their surrounding environment. It includes beliefs, values, and practices gathered from the practical experience of older generation, and its whole function is survival and development of culture of people.

Traditional foods, originated from ancestral kitchens are developed through ages, invented, modified, utilized and evolved to improve nutritional and social well-being of the people around the world. Most of them are culture specific, region specific, environment specific, community specific and season specific. These foods are socially, culturally and economically important and provide food security, enhance livelihood and improve nutritional and social well-being of people. Food culture arises out of the place of a people's origin, and so traditional local foods hold the potential to bind and stabilize communities and enable a cultural continuity through conserving their histories. Indian cuisine is represented as a wide spectrum of food cultures with distinctive regional differences and preferences (Achaya,1998).

Traditional food products are socially, culturally and economically important. These are developed on the basis of the domestic agricultural produce to meet the nutritional needs of the people and have great potential to develop new food industries. Moreover, traditional foods provide food security, enhance livelihood, improve nutritional and social wellbeing of people around the world, particularly the marginalized and vulnerable groups.

Rao and Srivastava (1998) defined traditional foods as those evolved out of necessity to make maximum use of local foods, utilizing available artifacts and expertise and carried down through generations.

Traditional food for a region is usually identified as the dietary system inherent within a culture that grows out of the social and natural resources available and accepted by the culture (Kuhnlein & Receveur, 1996). The definition is somewhat comprehensive since it involves socio-cultural factors such as the sourcing of materials and the preparation activities. Traditional food is a valuable part of a people's culture. It can be deduced from the literature that the various indigenous peoples in different regions who have assimilated with the local populace have tried all possible means to preserve and promote their traditional food, albeit with some difficulties because of environmental influences.

According to Preetam Sarkar *et.al* (2015), traditional Indian foods have been prepared for many years and preparation varies across the country. Traditional wisdom about processing of food, its preservation techniques, and their therapeutic effects have been established for many generations in India.

The substitution of traditional foods not only led to a loss of production of traditionally and culturally appropriate food, but also in the loss of traditional knowledge related to food production. It created serious health and socio-economic problems among community members (Diaz,2005). Hence, the traditional foods which reflect the rich heritage of regional cultures should be saved from extinction and the skills gained through generations have to be preserved.

Factors such as international migration, the communication revolution and culinary tourism have contributed to globalization of food habits and this has paved the path towards global food culture (Everett, and Aitchison, 2008). According to Hollingsworth (2000), traditional foods are now considered competitive products, with its unique materials and production techniques. Upliftment of these regional food items from local standards to global standards necessitates development of new policies and strategies for quality standardization.

The traditional Indian food culture should not be forgotten by every generation as it shows the identity of the Indian people itself in terms of culture and norms. Each of the instruments has its own tales and sentimental values along with it. Without them, the indian food will not have its own distinctiveness and cannot achieve the accomplishment that can be seen nowadays. Thus, several commendations should be made in supporting the cultures in order to preserve it for longer period.

There is no reliable sources or texts which contain authentic information on traditional recipes that currently exist. Our effort here is to generate a study entitled “Documentation and nutritive evaluation of traditional foods of Kerala – Thrissur district” with the following objectives.

1. To identify and collect information on the various traditional foods of different districts of Kerala
2. To document their methods of preparation of traditional foods.
3. To evaluate the nutritional characteristics of the selected traditional food.

## 2. REVIEW OF LITERATURE

Literature relevant to the present study entitled "Documentation and quality evaluation of traditional foods of central zone of Kerala" is reviewed under the following heads.

2.1. Importance of traditional knowledge

2.2. History of traditional foods

2.2.1. Traditional foods of India

2.2.2. Traditional foods of Kerala

2.2.3. Meaning, Concepts and Definition

2.2.4. History and Ethical Background

2.3. Traditional foods of adequacy of different group

2.4. Health and nutritional aspects of traditional foods

2.5. Key challenges of traditional foods

2.6. Future scope of traditional foods

### 2.1. Importance of traditional knowledge

Ranjay *et al.* (2021) reported that the critical role of lesser-known local plant species in the food, nutrition and livelihood security of traditional community in India. Considering women as a major custodian in knowledge and practices on foods, a total of 90 traditional women and 60 key knowledgeable community members (thus a total of 150 participants) were selected from East Siang and Upper Siang.

Ojha *et al.* (2022) reported that himalayan communities illustrate a rich agriculture-medicine use system that not only provides adequate dietary diversity and nutrition but also delivers therapeutic security. This study explores the food-medicine interface as observed by the marginal hill communities in the central Himalaya with an aim to assess traditional agriculture and food plants with relation to dietary diversity and nutritional and medicinal values based on comprehensive research.

According to Boesi (2014) tibetans have traditionally exploited few wild food plants. These mainly compensate for the lack of vegetables and fruit in traditional Tibetan diet, notably among pastoralists, and are far more important during famines as substitutes for roasted barley flour. Today few wild food plants are regularly consumed, less in the main towns and villages and moreso in remote areas and among pastoralists. Younger generations from towns have almost lost traditional botanical knowledge. Owing to modernisation and globalisation processes, many local people have specialised in collecting natural products increasingly demanded in China and abroad. Tibetan people strongly benefit from these activities. Tibetan medicine sees diet as a way of curing diseases and medical treatises describe therapeutic properties of several wild food plants that Tibetans nowadays consume.

Choudhary *et al* (2015) reported that traditional foods and their dietary guidelines are prescribed in Ayurveda. There is so much similarity in ayurvedic dietetics and traditional foods that many of the traditional health foods in India can be called ayurvedic foods. This review article introduces the concepts of ayurvedic health foods in India and describes several traditional heath foods across various regions of India. Recommended dietary guidelines according to age and health condition of the consumer, and seasonal considerations are presented for each of the traditional health foods of India. In the era of globalization of the population and international food trading, health-conscious citizens around the globe will benefit from the wealth of knowledge on traditional Indian and ayurvedic health foods of Indian origin.

Aneena (2009) reported in her study "Documentation and quality evaluation of traditional foods of central zone of Kerala" was taken up with the objectives of identifying and collecting information on the various traditional foods of central zone of Kerala and documenting their mode of processing, and evaluating quality characteristics of the selected less used traditional foods. The study was conducted in four districts namely Eranakualm, Thrissur, Palakkad and Malappuram comprising the central zone of Kerala. Senior citizens who possess the details of traditional food items and preparations in each locality were selected as the respondents. The respondents were categorised based on the communities they represent.

Payyappallimana (2010) described 'The United Nations' Decade of Education for Sustainable Development (DESD) aims, among other objectives, to foster and promote the

mainstreaming of intercultural approaches within a social learning process through multi-sectoral, collaborative and interdisciplinary methods. Biological as well as cultural diversity are inherently linked and form an important part of the sustainable development education process. Traditional knowledge (TK), a central dimension of bio-cultural diversity, is also receiving increased attention in this context. However, there are several socio-political and methodological challenges of integrating TK in Education for Sustainable Development (ESD) programs. Using the case of traditional medicine from Kerala state, India, this paper attempts to highlight the importance of and the issues pertinent to such integration in a local context.

According to Ramesh Chandran (2016) one of the visible impacts of globalization in Kerala is the transformation of the food habits of urban population, particularly the youth. The urban dietary pattern visibly shows that there is a conspicuous shift from traditional foods to fast foods. Along with that is the larger consumption of processed foods and packaged fruit juices.

Asha John *et al.* (2019) reported that just like in any art form, trends in the food service industry are constantly shifting to reflect the ever changing interests and needs of people. Keeping up with these trends is highly important to restaurant owners, chefs, are really anyone working in the foodservice industry.

Edward (2017) reported that traditional food and healthy eating habits has been one of the fast-growing areas. All humans, both men and women, require food for their survival. However, both men and women indulge in food as if it were their sole purpose of existence. Hence, eating disorders are common among men and women.

## 2.2. History of traditional foods

### 2.2.1. Traditional foods of India

Traditional Indian foods have been prepared for many years and preparation varies across the country. Traditional wisdom about processing of food, its preservation techniques, and their therapeutic effects have been established for many generations in India. Food systems can deliver numerous biological functions through dietary components in the human body. Indian traditional foods are also recognized as functional foods because of the presence

of functional components such as body-healing chemicals, antioxidants, dietary fibers, and probiotics.

Subramanyam *et al*, 2010 reported that, India has a rich and highly diverse food, and its various diets are well closely linked to social identity, religion and other cultural influences as well as local agricultural practices and wide range of food availability Vecchio *et al*, 2014.

Traditional food processing in India began when man ceased to be a food hunter (Potty, 1986). Each and every community in India have their own and distinct food ethos (Achaya, 1998). According to Pratima (2000), India has been the home for ageless culinary art, and had a rich heritage of a wide variety of traditional foods. According to Pattanayak (1986), traditional foods varied not only around the world but also within a region.

Vegetarianism in countries like India has been adopted mainly due to socio-economic and cultural factors rather than the health benefits of vegetarian diet (Kakade and Agte, 1997).

Egg halva is a traditional Indian sweet dish which is a combination of milk, liquid, whole egg and sugar (Kalra *et al*. 1998). Khoa is an important indigenous heat coagulated and partially dehydrated milk product (Sharma and Lal, 1999).

Documentation of vast range of traditional convenience foods across the different zones of North Karnataka was carried out by Ishwarappagol (2009). The study revealed that 162 traditional convenience foods (106 ready-to-eat and 56 ready-to-use) documented across the regions were preferred more among urbanites (134) compared to rural group (81). Cereal based foods dominated (60) the category (ready-to-eat 32, ready-to-use 28). Family size, type and number of generations living together negatively influenced the preparation of traditional convenience foods.

Khoa- jalebi, a unique traditional product of central India was studied by Pagote and Rao (2012). Devi and Kumar (2012), worked on the traditional, ethnic and fermented foods of different tribes of Manipur. The traditional foods of Manipuri's comprised of iromba, champhu, kangshoi, hawaichar, sibum, ngare, paknam, chagempomba, kungshu, hentak, khazing and heitak. Alcoholic beverages made up of rice, locally called as 'yu' are very common in almost all the festivals of the tribal people of Manipur.

Though a significant portion of Indian food is vegetarian, many traditional Indian dishes also include chicken, goat, lamb, fish, and other meats. Cuisine across India has also been influenced by various cultural groups that entered India throughout history, such as the Persians, Mughals, and European colonists (IAS Charisma, 2013).

Indian traditional foods are also recognized as functional foods because of the presence of functional components such as body-healing chemicals, antioxidants, dietary fibers, and probiotics. These functional molecules help in weight management and blood sugar level balance and support immunity of the body. (Hotz ,2007)

Indian traditional foods can be classified into eight broad categories: (1) processed grain products, (2) fermented foods, (3) dehydrated products, (4) pickles, chutneys, sauces, and relishes, (5) ground spice and spice mixtures, (6) fried food products, (7) dairy products, and (8) confections and sweets. (Srinivasan, 2010).

The cooked rice kept overnight in water was consumed as a delicious breakfast item by South Indians after mixing with curd (Subbalakshmi, 2005). Realization of functional properties of Indian traditional food eventually led to development of one of the world's oldest medicinal systems, the Ayurveda (Sarkar *et al*. 2015).

Angchowk *et al*. (2009) made an attempt to study the traditional foods and beverages of Ladakh, and to bring forth those dishes and beverages, which are true representative of the region. The traditional foods and beverages included in the study were tagikhambir (browned sour dough bread), tagibushuruk (puffed unleavened bread) tagitsabkheer (ground sprouted wheat bread), sepheag/ (freshly sprouted wheat bread) etc. These recipes have been described in detail including their method of preparation.

## 2. **Traditional foods of Kerala**

Traditional and Indigenous Knowledge have been used for centuries by indigenous and local communities under local laws, customs and traditions. It has been transmitted and evolved from generation to generation. Traditional knowledge has played, and still plays, an important role in vital areas such as food security, the development of agriculture and medical treatment. The importance of traditional and indigenous knowledge for its creators and for the world community at large, and the need to foster, preserve and protect such knowledge, has gained growing recognition at international level (Aneena,2009).

Foreign influence on the cuisine of Kerala is marked, with each religion from Muslims to Syrian Christians developing their own cuisine and style of preparation. The Moplah cuisine of the Malabar region has a distinct flavour, borrowed from the traders who regularly visited the region. Kerala cuisine has an abundance of coconut, rice, tapioca and spices like black pepper, cloves, cinnamon and ginger. The Portuguese introduced cassava, now widely eaten in Kerala. The region is also famous for its Sadhya, served at the Hindu festival Onam and consisting of boiled rice and a host of vegetarian dishes on a banana leaf. Kerala cuisine also features a lot of sea food like fish, prawns, mussels and crabs because of its long coastline.

## 3. Meaning, Concepts and Definition

Kerala cuisine is a culinary style originated in the Kerala, a state on the southwestern Malabar Coast of India. Kerala cuisine offers a multitude of both vegetarian and non-vegetarian dishes prepared using fish, poultry and red meat with rice as a typical accompaniment. Chillies, curry leaves, coconut, mustard seeds, turmeric, tamarind, asafoetida and other spices are also used in the preparation.

Kerala, in the south-western part of India, is known for its rich heritage and cultural diversity. Situated along the Malabar coast, Kerala has had regular interaction with the West since ancient times. From the coming of the Arab traders to the Portuguese, and later the British, Kerala has witnessed it all. This greatly influenced the socio-cultural fabric of the region, making it one of the most diverse states of India.

Traditional foods are foods based on solid foundation of culture, customs and natural environment of a country or a region of the world and eaten by the people for a long time (Tokuji, 1986). Kuhnlein and Receveur (1996) defined a traditional food as food from a particular culture available from local resources and culturally accepted andincludes socio cultural meanings, acquisition/processing techniques, use, composition, and nutritional consequences for peopleusing the food.

Azarand (1996) defined traditional food as a specific food in a region whose raw materials are locally available and which is not used in other regions. Rao and Srivastava (1998) defined traditional foods as those evolved out of necessity to make maximum use of local foods, utilizing available artifacts and expertise and carried down through generations.

According to Jordana (2000) a traditional product is a “representation” of a group, which belonged in a defined space, and is part of a culture that implies the cooperation of the individuals operating in that territory. The author also indicated that in order to be traditional, a product must belinked to a territory and it must also be part of a set of traditions, which will necessarily ensure its continuity over time.

Traditional food is at the core of indigenous cultures and economies and practices regarding harvesting, preserving and preparing food reinforce indigenous culture andidentity (Damman et al.,2008).

## 4. History and Ethical Background

Food is an integral part of any culture-Bhagavad Githa says “from food do all creatures come into being”.Traditional food processing in India began when man ceased to be a food hunter (Potty, 1986). Traditional foods evolved hundreds of years ago are indispensable for majority of people (Tyn, 1986).

According to Achaya (1998) food choices and food habits are an outcome of cultural heritage and economic and social factors. The traditional foods and cuisines in India could be traced as far back as to the Aryan times, some even to the pre-Aryan times, with the Muslim and European influence contributing later to new dishes that enriched the native cuisine of India. The author also pointed out that every community in India had their own and distinct food ethos.

According to Azizi *et al. (*1998) traditional foods have evolved through centuries taking intoconsideration the prevailing climatic conditions, availability of local materials and socio-economic conditions. Parpia (1999) indicated that traditional Indian foods were developed as part of at least forty indigenous cultures over centuries.

Pratima (2000) reported that India is the home for ageless culinary art, and had a rich heritage of a wide variety of traditional foods. Traditional foods are an expression of culture, historyand lifestyle (Slimani et al, 2002).

Traditions, region and culture linked to the food products were considered as important quality features (Holt and Amilien, 2007).

The authors also indicated traditional and regional products as part of the national cultural heritage which hold the potential to bind and stabilize communities. According to

Trichopoulou *et al.* (2007) investigation and registration of traditional foods contribute to the preservation of important elements of a nation's culinary heritage and culture and allows future generations, both from the native population and from other countries, to be acquainted with traditional foods.

**2.3 Traditional foods of different groups**

Traditional Indian meal patterns differ from region to region, but all contain a wide range of foods, normally including foods from each food group. (Kalpana, 2020)

According to Somnath Basak *et.al*. (2023) The recipes of traditional foods have been perfected, practiced, and handed over from generation to generation. A typical Indian "vegetarian" diet includes plant-based and dairy-based foods, while a "non-vegetarian" diet includes egg, fish, and meat. While the northern region is majorly dependent on wheat products, the eastern, north-eastern, and southern parts of India majorly depend on rice-based products.

According to Agilandeswari and Mohan (2017), Traditional South Indian foods provide a perfect combination of proteins from legumes and coconut, carbohydrates from rice, fats both visible and invisible from curry and fried savory items, vitamins and minerals from sprouted grams, and vegetables which contain functional components such as β-carotene, Vitamins C and E, thiamine, tocopherol, and antioxidant compounds. *Rasam* is a traditional South Indian food, prepared using tamarind juice as a base, with a variety of spices. *Rasam*, with all its ingredients medicinally claimed for various ailments, is a functional food.

Idli, is a popular steam cooked traditional Indian food prepared from a wet ground fermented batter of rice and black gram dhal (in the ratio of 3:1) by steaming in a mold. It is famous for its soft, spongy texture, desirable sour taste and characteristic aroma. (Nisha *et.al*., 2005)

*Dosa* is another fermented dish like *idli* mainly found in the south Indian region. It is a highly seasoned pancake, contains rice and black gram as primary ingredients. *Nannari sharbat* is a traditional herbal beverage prepared using the roots of *Decalepishamiltonii*. In Ayurveda the plant is called *Ananthamula*. Beverage is used in summer time for thirst

quenching and it acts as a hepatoprotective agent, which is good for stomach health, (Preetam Sarkar *et.al*., 2015)

South Indian parotta is wheat flour-based circular, unleavened, multi-layered flat bread. It is one of the staple food items in the southern states of India. Parotta is made from wheat flour, salt, water, and oil for spreading of the dough; however, optional ingredients such as sugar and egg are also used in the preparation of parotta. (Dasappa and Gandham Venkateshwara Rao, 2021)

### 2.4 Health and nutritional aspects of traditional foods

#### 2.4.1. Health and nutritional advantages of traditional foods

Proximate and mineral composition of 30 traditional and popular Indian foods were evaluated by Prasad *et.al*. (2000) and indicated that traditional foods provided approximately 350-660 Kcal/100 g and found that the lead and aluminium content of traditional foods were well below the permissible limits. Pattan *et.al*. (2001) evaluated the nutritional qualities of madeli, a traditional ready to eat sweet product and found that it contained 6.98g protein, 4.4g fat, and 1.19g of crude fibre per 100g and had a shelf life of 21 days. Khakhra Consumed for breakfast, snack or in the main meal was considered as a carrier of dietary fibre and minerals (Shirsath and Landge, 2006). Sattu, the nutritious popular traditional food of North India is an energy drink with medicinal properties like prevention of gastritis and sunstroke (Prakash and Swamy, 2006).

Modakams prepared during Ganesh Chaturthi and Naivedyam prepared during Gokulashtami complemented amino acids and provided good quality protein (Subbulakshmi, 2005). Halubayi, the traditional processed food product of Karnataka was found to be highly nutritious with good protein, carbohydrate and vitamins (Nagaraja, 2006). Kulkarni *et.al*.(2006) indicated the nutritional advantages of chakli, sev, khara gritters, laddu and hurigalu the traditional snack items of Karnataka.

Traditional supplementary foods consumed by lactating women of Gujarat namely wheat rab, budh gond ka soonthad high energy, protein and fibre respectively Mulimani *et.al*., (2001). The authors also indicated superior nutritional quality of kotta and battisaladu. Gupta *et.al*., (2003) observed high calcium, iron, zinc, copper and phosphorus in ajwain followed by gondpanjiri, kangni andhalwathe traditional foods consumed by lactating

women of India. The authors also indicated better protein and starch digestibility in traditional supplementary foods.

Lalithambika (2007) indicated the importance given to kanji, the traditional food of Kerala in ayurveda especially in diseased conditions due to its easy digestibility. Sharon *et.al.*(2006) indicated the nutritional significance of puttu, ada, and idiyappam, the traditional breakfast foods of Kerala with high protein, carbohydrate and energy density. Paal kanji,a traditional cereal and milk based Kerala delicacy was reported to be rich in protein, phosphorous, vitamin C, thiamin, riboflavin, iron, calcium, choline, copper, manganese and magnesium with good digestibility (Achuthan and Emmanuel, 2006). Chendamurian, the traditional banana delight of southern Kerala was found to contain highly nutritive milk proteins, milk solids and potassium and had laxative properties (Sudhakaran, 2006). The nutritional advantages of traditional foods namely putu, laddu, ada and coffee prepared using rice bran as the main ingredient were reported by Aneena and Indira (2007) and indicated that the foods had good amount of B complex vitamins, fibre, calcium and iron.

Nutritional advantages and the importance of traditional foods in Human physiological activities were indicated by Shin (2004).

Kuhnlein *et al*. (2002) evaluated 236 Canadian Arctic foods for macronutrients, minerals and fatty acids and indicated a considerable amount of nutrients in these traditional foods. A study conducted by Evans *et.al.,* (2003) on 36 traditional and imported foods of Tonga indicated that people preferred traditional foods and perceived traditional foods as more nutritious. Considerable micronutrients were found in traditional foods namely karat banana and pulque prepared from Agave species, and gac fruit (Kuhnlein, 2004). The water extract prepared from the brown algae, the traditional food of Noto area in Japan, had strong antioxidant activity (Kuda, *et al*. 2005).

Rasala, the dahi based milk product with good nutritional and medicinal attributes was found to be effective against bleeding disorders, burning sensation and thirst (Warrier and Sudhakaran, 2006). Karkkidakamarunnu kanji,a traditional herbal concoction, was found to be beneficial for the purification of the body and soul, providing nourishment to the whole body and augmenting the immune status Asha *et.al*. (2006). Pulissery, a prominent culinary item prepared from curd in Kerala, had health promoting and therapeutic properties with the nutritional benefits of fermented milk products (Shifa,

2006). Vijayakrishnan (2007) indicated excellent medicinal value of Kerala sadya and reported that the combination of pepper, cumin seeds and curd in Kalan, a side dish of the traditional sadya gave protection against three doshas of ayurveda. Sour curd used in Kalanwas reported to be good for digestion and pepper and cumin seeds avoided gastritis and acted as antimucotic agent.

Uauy *et al*. (2001) indicated the protective effect of traditional diet in chronic diseases and obesity. Li *et.al*. (2004) observed functional materials in traditional fermented soybean foods namely sufuanddouchi. Apparent health benefits of traditional Greek foods were reported by Trichopoulou *et.al.* (2007). The traditional Mediterranean diet of Greece was associated with reduced total mortality as well as reduced mortality from coronary heart disease and cancer (Trichopoulou, *et al*., 2007).

### 2.4.2. Impact of dietary transition on health and disease

The nutrition transition had direct implications in the upsurge of non-communicable diseases (Zimmet, 2000). Dietary transition refers to changes in the quantity and composition of the diet due to improved economic development leading to lack of physical activity, weight gain, lifestyle changes, development of diabetes mellitus, high blood pressure and increased risk of heart diseases and some forms of cancer (Seshadri, 2005).

South Indian food is mainly based on Idli and dosa enhances probiotic activity. Indian traditional rasam has high antipyretic, hypoglycemic (Preethikaa and Brundha, 2018) and reduces hypertension (Alleyne *et al*., 2005). Some Indian foods are proven to cure cancer also (Brundha and Pathmashri, 2019). Food especially made from beet root is proven to have a significant effect on haemoglobin value. Doctor check ups also suggest eating healthy food improves the health of the patient in many ways (Varshini and Brundha, 2020), (Timothy, Samyuktha and Brundha, 2019). Inclusion of clove to food has a beneficiary effect on teeth.

In developing countries, the rate of obesity, diabetes, cardiovascular disease and cancer increased as a consequence of urbanisation and socioeconomic changes (Albala *et al.*, 2001 and Popkin *et.al.,* 2001). Jimaima *et al.,* (2001) reported an increased consumption of introduced foods and an increased prevalence of diabetes among the indigenous population. The authors also indicated increased incidence and prevalence of non-communicable diseases due to deviation from the traditional food consumption pattern

and traditional lifestyle. Lako (2001) also observed increased incidence and prevalence of non-communicable diseases among Fijians due to drastic changes in the dietary pattern and deviation from the traditional food consumption pattern and traditional lifestyle.

Direct relationship between decreased consumption of traditional foods and decreased physical activity with obesity and related chronic diseases was observed by Uauy *et.al.,* (2001) and Kuhnlein *et al.* (2004). Yusuf *et al*. (2001), Kuhnlein *et al*. (2002) and Kumanyika *et al*. (2002) also documented the relationship between the dietary changes associated with urbanisation and globalisation and increased prevalence of numerous obesity-related chronic diseases around the developing world, including diabetes and cardiovascular diseases.

Consumption of market food and decreased consumption of traditional food, coupled with decreased physical activity, resulted in increased incidence of obesity and its correlated diseases like diabetes, heart disease a nd dental caries. Kuhnlein (2003) indicated that in addition to obesity and other associated diseases, increased consumption of industrially processed foods lead to poor intake of micronutrients.

Urbanisation and westernisation forced people to give up their traditional food habits and inclusion of high saturated fat containing processed foods leading to variou s health hazards (Roy, 2001). As an impact of westernisation, Blazose (2002) indicated that traditional plant-based cuisines became energy dense due to increased proportion of animal food and fat and decreased proportion of plant foods.

Mendez *et al.* (2004) compared the diets in urban areas with traditional diet and indicated increased consumption of fat and more prevalence of obesity among low an d middle income groups residing in urban areas. Damman *et al*. (2008) also indicated increased prevalence of chronic disease among indigenous communities due to nutritio n transition characterized by a rapid westernisation of diet and lifestyles.

Transition in the dietary pattern characterized by shift towards high intake of calorie, saturated fat and cholesterol was observed by Schmidhuber (2004). Substantial decline in the intake of potassium was observed due to consumption of westernised diet by Demigne *et.al.*(2004) when compared to traditional diet. Seshadri (2005) also indicated the presence of high sodium content in processed foods compared to their natural

counterparts and its health impact. Nutrition related problems due to consumption of processed, ready to cook and ready to serve foods among career women was pointed out by Subbulakshmi (2005) due to their increased purchasing power and lack of time for cooking traditional foods.

**2.5 Key Challenge in the production and use of Traditional foods**

Oniang'o(1999) indicated that the faster the people adapt to the new globalized food patterns, the less likely traditional knowledge will be transferred to the next generation. Traditional foods and food habits were progressively replaced by the globalized food culture of the multinational corporations leading to disastrous impact over the past several decades stated by (Zimmet, 2000).

Indigenous and traditional foods and food systems were found to disappear, leading to significant loss and threat to personal health and security at the regional and international level (Kuhnlein, 2003). Diaz (2005) stated that substitution of traditional foods not only led to a loss of production of traditional and culturally appropriate food, but also led to loss of traditional knowledg e related to food production.

Evans *et al.* (2003) indicated one of the important effects of globalisation as the increased reliance on imported foods, rather than traditional foods. The impact of globalisation of food industry on the food habits and dietary patterns of people of Tanzania, Asia, Latin America and some African nations and Korea were reported by Kinabo (2004): Erdos(2004): Roe (2004): and Shin (2004)

Urbanisation an globalisation enhance access to no traditional foods due to changing prices and production practices, as well as trade and marketing practices (Lang, 1999; Evans *et al.*, 2003 and Chopra, *et al*., 2002).

Foreign investment had contributed to the rise of fast food restaurants and western-style supermarkets, which also influenced consumer food choices by offering greater variety, quality, convenience and competitive prices in high-value added foods (Regmi and Gehlar 2001; Reardon, *et al.*,2003).

Increased purchasing power, change in socio-economic status and life styles were considered as the factors which contributed to enhanced consumption of processed and

convenience products (Kumar and Anjaneyalu, 1998). Ranjini *et al.* (2000) also indicated the availability of processed foods as the main reason for the tremendous change in t he modern day consumption pattern of convenience and fast foods.

The diversity of India is reflected in diverse nature of traditional foods and this restricts the market potential of traditional foods (Chaudhry, 2006). Kulkarni and Unnikrishnan (2006) observed limited shelf life as the key challenge in the marketing of traditional products.

Bedekar
(2006) indicated that majority of traditional Indian processed foods were made most unhygienically in unorganized sector with an adoption of low level of mechanization. The main challenge in the traditional food industry according to Ramesh (2006) was the design of machineries because of lack of adequate data on engineerin g properties of traditional foods.
stability was reported as the prime challenges in traditional food industry (Chaudhry, 2006).

**2.6 Future scope of Traditional foods**

Traditional foods, used more as seasonal and banquet food or for religious ceremonies rather than as staple food, had become popular as a delicacy food (Shin,1999). According to Hollingsworth (2000) one of every sevenfold dollar over the next decade would be spent on ethnic food. The author also predicted that food manufacturers would compete for market share in the faster growing ethnic cuisines like Thai, Caribbean, Mediterranean and Indian. According to Parpia (2004) the value of traditional processed foods accounts for nearly 75 per cent of the processed foods in the market in India. Since, traditional food has been considered as a competitive product, with unique materials and production techniques, efforts to export them are expanding nowadays (Shin, 2004). Traditional food market in India had witnessed a rapid growth over last five to eight years and large scale production and preservation of traditional foods had become the need of the hour due to the scope of these products for indigenous consumption, export purposes and the interest showed by multinational companies (Dipali and Rodrigues, 2006). With rapid urbanisation and advancement of heritage food production technologies, traditional convenience and ready to serve foods were pouring in the market from time to time (Manjula *et al.,* 2006).

Ohiokpehai (2003) indicated that women's indigenous knowledge on traditional foods could be harnessed to improve nutrition security. Though, the traditional food system of indigenous people contained a wealth of micro nutrients, in public – health promotion programmes and health training programmes, this information was not used due to lack of scientific coverage (Kuhnlein, 2003)

Everett and Aitchison (2008) indicated correlation between increased levels of food tourism interest and the retention and development of regional identity. The authors ago stressed the conservation of traditional heritage, skills and ways of life, the social and cultural benefits and the benefits of the production of local food.

Jacob (2007) examined the role of NGOs in the economic and community development of Kerala. A case study of Peermade Development Society (PDS), one of the prominent and major NGOs in Kerala in the Peermade Taluk of Idukki district, was undertaken. NGOs are somewhat stable groups with defined activities and programmes and have, barring some exceptions, an urge and also an exposure to the horizontal and sometimes vertical linkages within and across their chosen sectors of activity.

Tourists are gradually moving towards niche travel like adventure, luxury, ethnic, indigenous, heritage, health and many other such new tourism products. They look forward to experience and to be part of the culture and heritage of the destinations they seek to explore (Divecha, 2012).

Nanotechnology is the emerging revolution having great potential in every sectors from mechanics to medicine including food industry. It is the study of manipulation and control of matter on atomic and molecular scale having at least one characteristic dimension in nanometer mostly ranging from 1 to 100 nm (Chellaram *et al.*, 2014). It can even be used to detect food pathogens acting as food quality and safety indicators (Bott, Stormer and Franz, 2014). In food processing, nanoencapsulation of food (nano-sized) ingredients, nutritional supplements.

Nowadays, high technologies are widely adopted into agricultural production, biological diversity conservation and crop improvement. (Thao, 2016). The Indian foodservice market is projected to grow at a rate of 10.3% during the forecast period (2018–2023). Food industry of Kerala is also booming at a high rate so importance of this highly

immense as it will help us in understanding the various changes under going in this industry. (Sujith and John, 2019)

Under present circumstances, conventional breeding techniques are not sufficient. Innovation in plant breeding is critical in managing agricultural challenges and achieving sustainable crop production. Novel plant breeding techniques, involving a series of developments from genome editing techniques to speed breeding and the integration of omics technology, offer relevant, versatile, cost-effective, and less time-consuming ways of achieving precision in plant breeding. Opportunities to edit agriculturally significant genes now exist as a result of new genome editing techniques. (Fiaz *et al.* (2021).

The food industry seeks development of new products that follow modern trends and traditional method and are able to conquer today's consumers, while at the same time maintaining the identity of specific products, valued as traditional. (Raquel *et al.,* 2021)

# 3 . MATERIALS & METHOD

This chapter deals with methods and tools follow in the various phase of the study and the details are presented under the following headings.

3.1 Locality of the study

3.2 Selection of the sample

3.3 Plan of study

3.3.1 Collection of information regarding traditional food habits

3.3.2 Documentation of traditional foods

3.3.3 Preparation of selected traditional foods in Kottayam

3.3.4 To develop a nutritive value of selected traditional foods in Thrissur district

## 3.1 Locality of the study

Locality of my study is Thrissur district purposively selected for the study as there exist wide diversity in food habits, religion, and culture and socioeconomic conditions.

From Thrissur 10 study location traditionally known for regional and religious preparations.

Thus, 10 study locations were selected for the study and the list of identified study locations are given in Table 1.

Table 1. Details of locations selected for the study

| SL . NO | THRISSUR |
|---|---|
| 1. | Chalakudy |
| 2. | Thalikulam |
| 3. | Vadanapilly |
| 4. | Perinjanam |
| 5. | Kodungallur |
| 6. | Varakkara |
| 7. | Kuriachira |
| 8. | Ollur |
| 9. | Mannuty |
| 10. | Irinjalakuda |

## 3.2 Selection of the Sample

Elderly persons above the age of 60 years with expertise in traditional food preparations were also selected randomly from each study locality. As traditional food habits differ with respect to region, religion, and caste, the selected experts were categorized based on the communities they represent. Thus, 3 communities namely Kerala Hindu community. Muslim (MU) and Christian (CH) community with distinct regional and religious diversified culinary culture were selected purposively. As Christians of the Thrissur district had unique food habits, Hindus of Thrissur were also included in the study. A total of 20 elderly persons were selected as the sample for the study and the number of respondents belonging to each community in each district is given in Table 2.

Table 2: Distribution of respondents selected for the study

| SL . NO | COMMUNITIES | THRISSUR |
|---|---|---|
| 1. | Christian community | 12 |
| 2. | Muslim community | 6 |
| 3. | Hindu community | 2 |

## 3.3 Plan of study

Based on the objectives of the study, the plan of the study was designed. The study comprised.

3.3.1 Collection of information regarding traditional food habits in Thrissur.

3.3.2 Documentation of traditional foods.

3.3.3 Preparation of selected traditional funds.

3.3.4 To develop a nutritive value of selected traditional foods.

### 3.3.1 Collection of information regarding traditional food habits in Thrissur

From the identified study locations, information regarding the traditional foods and food habits of each community associated with religious customs, festivals, special occasions, rituals, physiological conditions and their method of preparation, were collected through questionnaire. This method is used for shared learning between local people and outsiders to enable the researcher to collect information.

A questionnaire is a research instrument that consists of a set of questions for the purpose of gathering information from respondents through survey or statistical study. We prepared questionnaire and distributed in to different houses to know their traditional foods, their traditional food preparation methods .We collected it back and get to know more details on the traditional foods and their nutritional benefits.

### 3.3.2 Documentation of Traditional foods

From the group discussions and focus group interviews, the details of different traditional foods of different communities were identified and a list of traditional foods thus identified is given in Table 3. In depth interviews and case studies were also conducted with selected skilled experts to collect detailed information of method of preparation of selected traditional foods. Community information sharing of traditional wisdom of the selected experts was also organized in preferred cases wherein documentation of the process through photographic and written methods was done.

Table 3 : Collected traditional food recipes

| SL.NO | NAME |
|---|---|
| 1. | Velappam |
| 2. | Injipuli |
| 3. | Kozhipidi |
| 4. | Beef thengakothu olathiyathu |
| 5. | Kattandiappam |
| 6. | Peechaam podi |
| 7. | Ulli theeyal |
| 8. | Unniyappam |
| 9. | Elanji |
| 10. | Neypathal |

| | |
|---|---|
| 11. | Vattayappam |
| 12. | Vettu cake |
| 13. | Kinaathappam |
| 14. | Avalos unda |
| 15. | Maniputtu |
| 16. | Inas |
| 17. | Indariyappam |
| 18. | Chicken kumbalam curry |
| 19. | Andi unda |
| 20. | Achappam |

Out of these 20 recipes 10 recipes were selected

1. Injipuli
2. Unniyappam
3. Elanji
4. Neypathal
5. VelleppamManiputtu
6. Maniputtu
7. Avolsuunda

8. Beef tengakothuolathiyathu

9. Peechampodi

10.Kinnathappam

### 3.3.3 Preparation of selected

**1)** Injipuli

Ingredients

1/2 cup tamarind

1/4 cup water

2.5 cups ginger chopped

1 tsp mustard seeds

5-6 nos green chilli

1 pinch asafoetida

1/8 tsp turmeric powder

salt to taste

3-4 tbsp jaggery water

Method of preparation

1. Soak the tamarind in 2 cups warm water for 30 water and squeeze the extract and keep it ready

2. Add oil to the pan and fry chopped ginger until brown and roasted.

3. Take it in the blender and blend to a coarse paste to the same oil, pop in mustard seeds, green chillies , asafoetida and fry for half a minute.

filter

4. Add tamarind water to the pan along with turmeric powder, salt

5. Let it boil until thick

6. Once thick add jaggery water and mix again.

7. Cook in simmer until oil leaves the sides of the pan

8. Cool and store in air tight container.

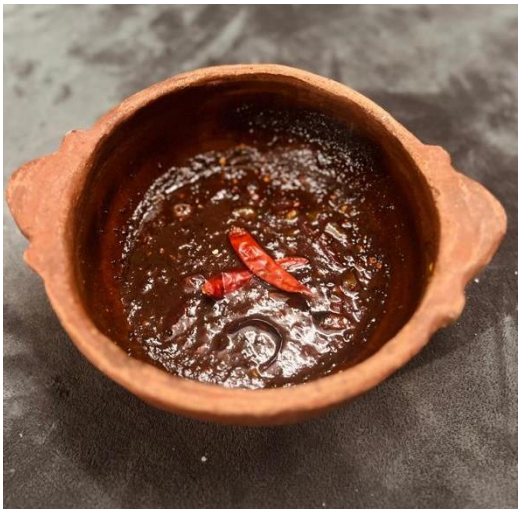

Plate 1 – Injipuli

**2)** Unniyappam

Ingredients

3 cups raw rice

5 small bananas

750 gms jaggery

¾ cup water

2 tbsp ghee

1 tsp cardamom powder

A pinch of salt

Coconut shards

Coconut oil

Method of preparation

1. Wash the raw rice and strain
2. Soak them for at least 2 hours
3. Coarsely grind the soaked raw rice
4. Make jaggery syrup by melting it in ¾ cup of water
5. Into the rice powder add banana puree, jaggery syrup, cardamom powder and a pinch of salt, Mix well
6. Keep this batter aside for at least 6 hours
7. Fry the coconut shards in ghee

8. Mix these too in the batter
9. Heat coconut oil in an unniyappammould
10. Pour the batter in the holes
11. Flip the unniyappam when one side is nicely cooked

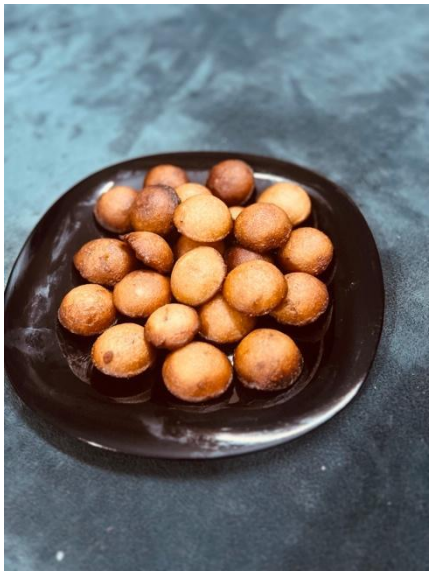

Plate 2 – Unniyappam

**3)** Elanji

Ingredients

1 cup Maida / all purpose flour

1 Egg

1/4 tsp Turmeric powder

Salt to taste

Water as required

For Stuffing:

1 cup,grated Coconut

3 tbsp Sugar

1/2 tsp Cardamom powder

10 each Cashew nuts and raisins

3 tbsp Water

Method of preparation

1. Heat a pan and add sugar and water to make a syrup.add coconut,cardamom powder,cashew nuts,raisins and mix well,stir continuously it in medium heat for 5 minutes

2. Remove from the flame. Now the filling is ready.

3. Take a bowl add maida,egg,turmeric powder,salt and mix well.

4. Add enough water and make a smooth batter.the batter should be thinner than the dosa batter.

5. Heat a non-stick pan and pour a spoon full of batter in the centre.spread with the back of the spoon to a thin round

6. Keep on medium flame for 1-2 minutes

7. When it is cooked on one side,remove it into a plate and place a spoon full of coconut filling on one end of the pancake and roll it.

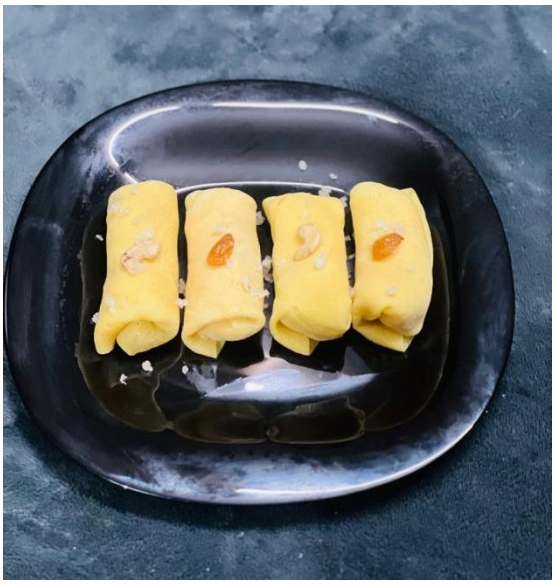

Plate 3 – Elanji

**4)** Neypathal

Ingredients

White rice – ¾ cup

Rice flour

Coconut – 1 cup

Fennel seeds - 3-4 tsp

Onion – small piece

Salt

Water

Oil

Serves 3

Method of preparation

1. To begin making the Ney Pathal Recipe, we will first grind the chopped onion, cumin seeds and coconut to a coarse paste by adding one cup water and set aside.
2. Take a bowl, add rice flour, salt to taste, ground onion paste and mix well till there are no lumps.
3. Mix until it has thickened to form a dough. Heat a kadai with oil to fry the puris. Take out a small ball of dough and roll it flat not too thin.
4. Flatten it and roll it again to about 1 centimeter thickness. Fry the puri when the oil becomes hot.
5. Keep flipping it over and fry it so that it evenly get browned on both the side. Take the puri out and strain it over a napkin. Do the rest for the remaining ingredients.

6. Serve the Ney Pathal Recipe along with Kurma, Kerala Style Egg Roast Curry to make it a complete meal.

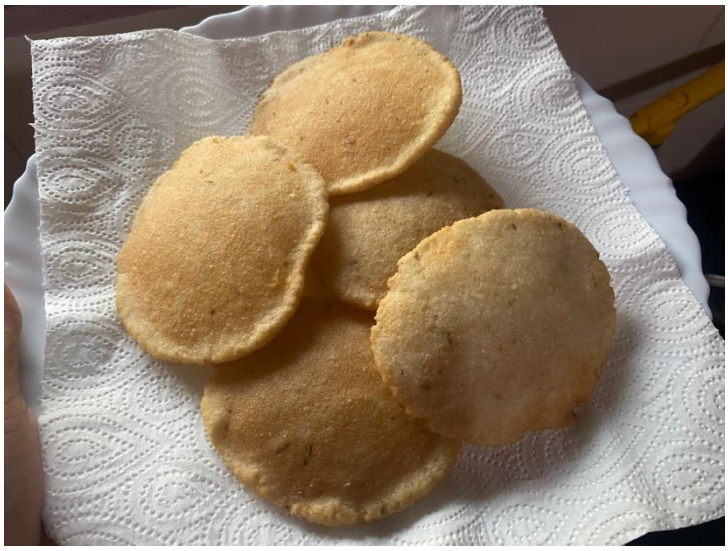

Plate 4 – Neypathal

**5)** Velappam

Ingredients

1. Rice powder – 1 cup
2. Yeast – ½ tablespoon
3. Sugar – ¼ cup
4. Coconut milk – 1

Serves 5

Method of preparation

1. To begin making the Kerala Style Appam, we need to first soak the rice along with the fenugreek seeds in water for at least 3 to 4 hours.

2. Once soaked, grind the rice along with the grated coconut, yeast and the cooked rice. Add very little water to make a thick and smooth batter. Once ground into a batter. Add a little salt and sugar to taste and allow the appam rice batter to ferment for about 6 hours in a warm place. The fenugreek in the batter, will help in light fermentation of the batter.

3. After 6 hours, the appam batter is now ready to be used.

4. Preheat the Appachetty or the Appam pan on medium high heat. Pour a ladle of batter on the Appachetty and swirl the pan in circular fashion to spread the batter.

5. The batter will be thick in the center and thin on the sides. Cover the pan with a lid for approximately 2 minutes until it is crisped and golden brown on the sides and the centre is steamed and cooked.

6. Serve the velappam along with Kadala Curry or Kerala Style Vegetable Stew for breakfast or a wholesome weeknight dinner.

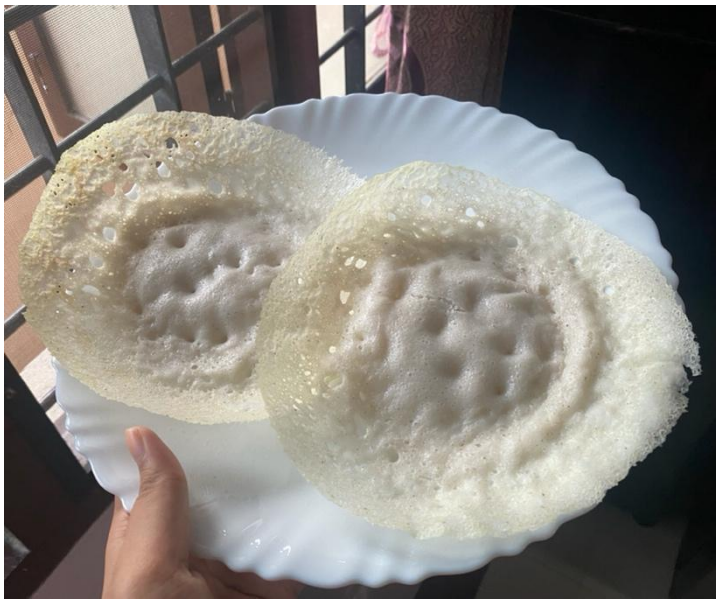

Plate 5 - Velappam

**6)** Maniputtu

Ingredients

1. Rice flour – 2 cup
2. Grated coconut – 2 cup
3. Sugar – 1 tsp
4. Salt – 2 tsp
5. Ghee – 1 tsp
6. Serves 4

Method of preparation

1. Heat a bowl then boil water with enough salt in it. When the water boils, add the rice powder, jeera, coconut and mix well. Turn off the stove and cover it with a lid.
2. After 5 minutes when the dough is still warm & knead it very well.
3. Note: Apply a little oil on your palm and make small balls of the dough. Sprinkle some rice flour on the balls to prevent them from sticking together.
4. Keep the steamer on the pot and allow it to steam for 8 minutes.
5. After 8 minutes, switch off the flame and remove from the pot.
6. Then gently push the maniputtu using a wooden laddle.
7. Tasty Mani Puttu is ready.
8. Serve hot with ghee, sugar or curries.

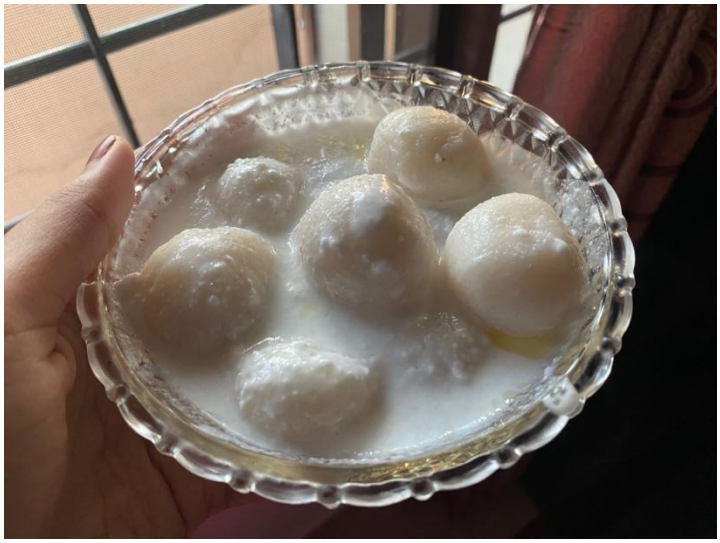

Plate 6 – Maniputtu

**7)** Avalos Unda

Ingredients

rice – 200 gm

Coconut – 100 gm

Jiggery – 100 gm

Serves - 3

Method of preparation

1. Avalos Powder - Mix coconut, rice powder, salt and cuminswell .
2. Sprinkle some water and make it like dough for puttu. i.e in small coarse form,and soak it for 15 minutes.
3. Now it will be stiff ,break these and fry them in a fry pan.
4. Switch off the flame when smell kicks in and it becomes brownish.
5. Cool it and make it to powder form, Nowavalos powder is ready.

6. Avalos Unda : Heat water and jaggery in a vessel and make the jaggerypani/gravy. Filter it well.
7. Make it concentrated like thread when poured down.
8. Do not over cook it ,because it may become so hardened.10
9. Switch off the flame and add ghee and mix them. Make small balls, if you are making more ones add sarkarapani too.
10. Avalos unda is ready to have.

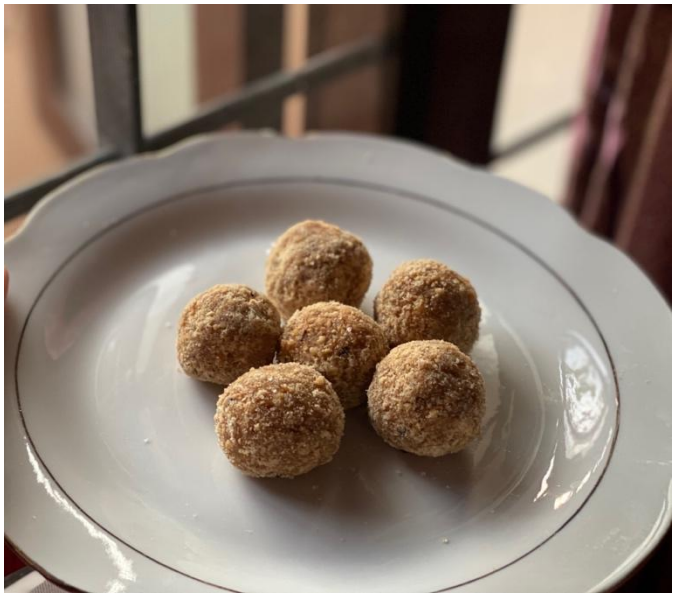

Plate 7 – Avlos unda

**8)** Beef thengakothuolathiyathu

Ingredients

Beef – ½ kg

Coconut – 10 g

Ginger -3g

Green Chilly – (4) 3 g

Turmeric - 1 tea spoon

Chilly powder – 3 tea spoon

Oil – 10ml

Onion -40g

Small onion- 5g

Garlic – 2g

Coriander- ½ tea spoon

Curry leaves – 2-3 leaves

Salt – 2 tea spoon

Method of preparation

1. Wash and clean beef properly

2. Add salt , turmeric , ginger ,chilly ,coconut , curry leaves , chilly powder ,onion garlic paste  3. Mix it well .

4.Cook in a pressure cooker for 20 mins

5. After getting cooked and garnish the food .

6. Serve hotly with rice or chappathi

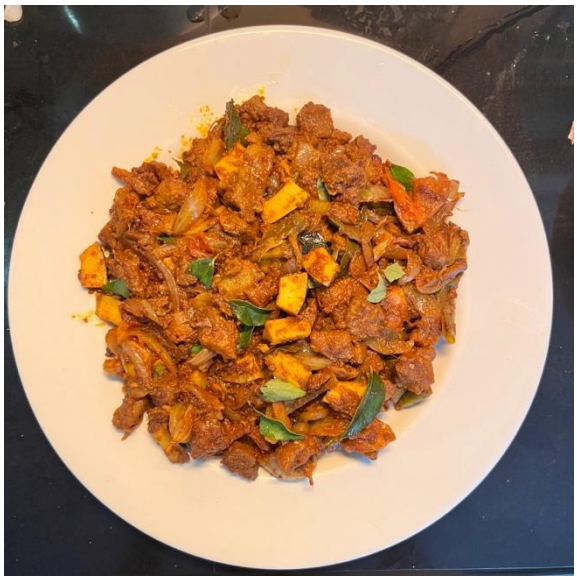

Plate 8 – Beef thengakoth olathiyathu

**9)** Peechaampodi

Ingredients

Rice flour – 1 cup 250 g

Salt – a pinch

Sugar – a pinch

Chilly powder –a  pinch

Cumin – a pinch

Hot water –

Coconut – half cup

Serves – 6

Method of preparation

1. Mix above all ingredients together
2. Roll it using hands and press the same .
3. steam and cook it for 20 mins
4. Peechampodi is ready to serve .

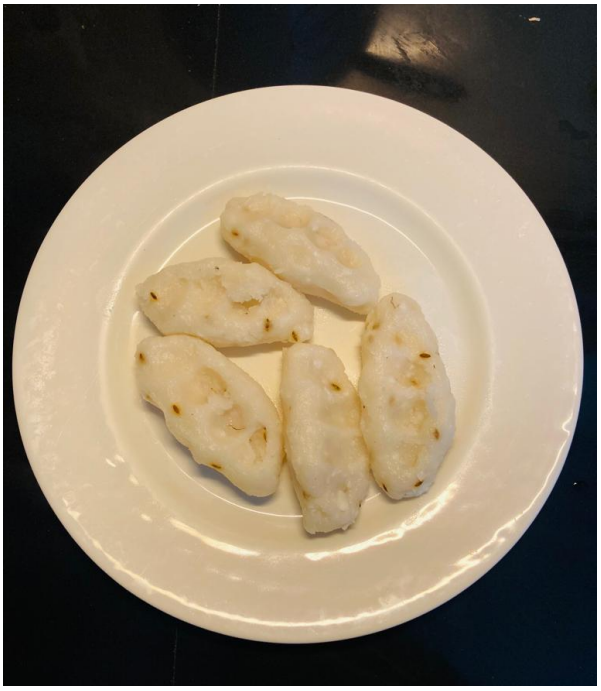

Plate 9 - Peecham podi

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**10)** Kinaathappam

Ingredients

Rice flour – 1 cup (60) g

A salt – 1 pinch

Sugar- ½ cup – 30g

Cumin – 1 pinch

Coconut milk -2 cup (120 ml)

Method for preparation

1.Mix all the above together .

2. Place it for 1/2hour

3. Pour the mixture to the kinnam

4. Steam and cook it for 20 mins

5. Cut the kinnathappam in to pieces and serve it hot .

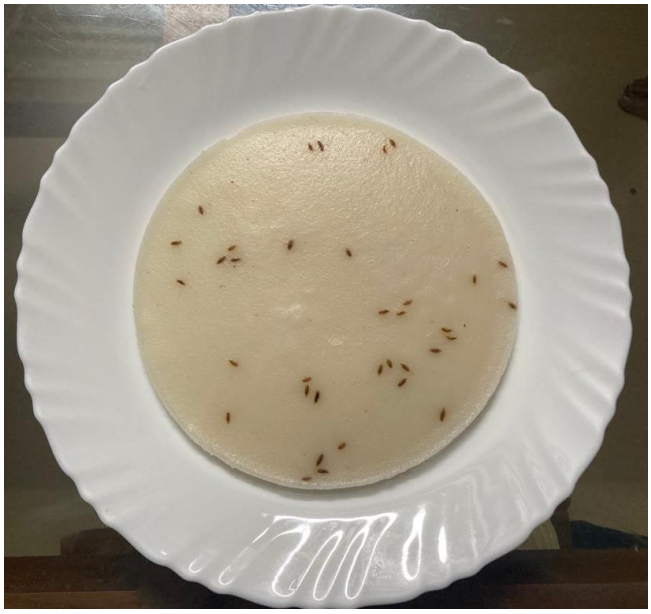


Plate 10 - Kinnathappam

### 3.3.4 To develop a nutritive value of selected traditional foods

Macronutrients are carbohydrates, fats and protein. They are nutrients used in large amounts "macronutrients are the nutritive components of food that the body needs for energy and to maintain the body's structure and systems", says MD Anderson wellness dietitian Lindsey Wolford. The macronutrients used to develop the nutritive value calculation are energy, protein, carbohydrate and fat. Micronutrients are vitamins and minerals needed by the body in very small amounts. However, their impact on the body's health are critical, and deficiency in any of them can cause severe and even life threatening conditions. The micronutrients used are iron, potassium, vit A, vit B, vit C, folate and fibre.

**Macronutrients:**

**Energy**

Our bodies need the energy to grow and repair themselves, keep warm and do physical activity. Energy comes from food and drinks, in particular from carbohydrates, protein, fat and alcohol. Carbohydrates, protein and fat are essential **macronutrients** (often called 'macros') as we need them in our diet in large amounts (macro=large) to survive and function. Alcohol is non-essential (not needed in our diet).Energy is measured in kilojoules (kJ) or calories (kcal).

**1 kcal = 4.2 kJ**

**Carbohydrates**

Carbohydrates, or carbs, are sugar molecules. Along with proteins and fats, carbohydrates are one of three main nutrients found in foods and drinks.Your body breaks down carbohydrates into glucose. Glucose, or blood sugar, is the main source of energy for your body's cells, tissues, and organs. Glucose can be used immediately or stored in the liver and muscles for later use.Some foods don't have a lot of carbohydrates, such as meat, fish, poultry, some types of cheese, nuts, and oils.

**Protein**

Protein is found throughout the body—in muscle, bone, skin, hair, and virtually every other body part or tissue. It makes up the enzymes that power many chemical reactions and the haemoglobin that carries oxygen in your blood. At least 10,000 different proteins make you what you are and keep you that way. Protein is made from twenty-plus basic building blocks called amino acids. Because we don't store amino acids, our bodies make them in two different ways: either from scratch, or by modifying others. Nine amino acids—histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine—known as the essential amino acids, must come from food.

**Fat**

In humans and many animals, fats serve both as energy sources and as stores for energy in excess of what the body needs immediately. Each gram of fat when burned or metabolized releases about 9 food calories (37 kJ = 8.8 kcal).

Fats are also sources of essential fatty acids, an important dietary requirement. Vitamins A, D, E, and K are fat-soluble, meaning they can only be digested, absorbed, and transported in conjunction with fats.

Fats play a vital role in maintaining healthy skin and hair, insulating body organs against shock, maintaining body temperature, and promoting healthy cell function. Fat also serves as a useful buffer against a host of diseases. When a particular substance, whether chemical or biotic, reaches unsafe levels in the bloodstream, the body can effectively dilute—or at least maintain equilibrium of—the offending substances by storing it in new fat tissue. This helps to protect vital organs, until such time as the offending substances can be metabolized or removed from the body by such means as excretion, urination, accidental or intentional bloodletting, sebum excretion, and hair growth.

**Micronutrients :**

**Vitamin A**

Beta-carotene belongs to a group of coloured pigments called carotenoids. It's converted to vitamin A in the body and found in many fruits and vegetables. Beta-carotene and other red, orange, and yellow pigments called carotenoids are considered antioxidants. They provide about 50% of the vitamin A needed in the diet. Vitamin A is an essential nutrient. Its antioxidant and anti-inflammatory effects help to protect cells from damage. People use beta-carotene for an inherited disorder marked by sensitivity to light. It is also used to prevent certain cancers, heart disease, cataracts, aging skin, and many other purposes, but there is no good scientific evidence to support most of these uses. Many global health authorities recommend getting beta-carotene and other antioxidants from food instead of supplements.

**Vitamin B12**

Vitamin $B_{12}$, also known as cobalamin, is a water-soluble vitamin involved in metabolism. It is one of eight B vitamins. It is required by animals, which use it as a cofactor in DNA synthesis, and in both fatty acid and amino acid metabolism. It is important in the normal functioning of the nervous system via its role in the synthesis of myelin, and in the circulatory system in the maturation of red blood cells in the bone marrow. Plants do not need cobalamin and carry out the reactions with enzymes that are not dependent on it. Vitamin $B_{12}$ is the most chemically complex of all vitamins, and for humans, the only vitamin that must be sourced from animal-derived foods or from supplements.

# 4.RESULT AND DISCUSSION

Result and discussion of the present study on 'Traditional recipes of Kerala' are presented in this chapter under the following headings

4.1 Traditional food habits of different communities

4.1.1 Preference of traditional foods

4.1.2 Reasons for preference of traditional foods

4.1.3 Frequency of preparation of traditional foods (breakfast, lunch, dinner)

4.2 Chemical composition of selected traditional food

## 4.1 Traditional food habits of different communities

Traditional foods evolved through hundreds of years is still an inevitable segment of our culture. In every part of the society, people had diverse food habits which are strongly bound to the region, religion, economic status and cultural beliefs. Kerala, the Emerald of south, besides its natural wealth is proud of its exquisite cuisines. In this section, traditional food pattern prevailing in the Malappuram district of Kerala with particular reference to traditional foods and traditional food pattern of various communities are discussed.

### 4.1.1 Preference for traditional foods among different communities.

The details regarding the preference for traditional foods among different communities are given in Table 4

Table 4 : Perference of traditional food

| Communities (n) | Preference for Traditional foods | |
|---|---|---|
| | Preferred | Not preffered |

| | (%) | (%) |
|---|---|---|
| Christian<br><br>(12) | 7<br><br>(58.3) | 5<br><br>(41.66) |
| Muslim<br><br>(6) | 5<br><br>(83.33) | 1<br><br>(16.66) |
| Hindu<br><br>(2) | 2<br><br>(100) | - |
| Total 20<br><br>(100) | 14<br><br>(70) | 6<br><br>(30) |

Numbers in parenthesis are percentage.

It was found that all respondents of Kerala Hindu ,Christian ,Muslim preffered traditional foods. Majority of the respondent is Christian (58.3%) , Muslim (83.33 %) and Hindu (100%) communities also gave preference to traditionals food .

It was reported that overwhelming majority of Indian consumers preferred to take traditional Indian meals rather than western foods (Indian Food Industry, 2001). Invasion of tin food culture which caused many hazardous health implications have brought up a preference towards traditional eating habits (Leena 2007). Chaudhry (2006) also indicated the popularity and preference of traditional Indian foods especially among those who took food from outside. In contradiction to this, Rajashekhar (2005) reported that the traditional dishes take lot of time to prepare and the modern foods like bread, butter/jam and eggs, porridges, cornflakes, sandwiches, noodles etc are replacing them.

### 4.1.2 Reasons for preference of traditional foods

The reasons indicated by the respondents for the preference given for traditional foods are presented in Table 5.

Table 5: Reasons for preference of traditional food

| Reason | Christian (n=7) | Muslim (n=5) | Hindu (n=2) | Total (n=14) |
|---|---|---|---|---|
| Healthy | 7 (100) | 5 (100) | 1 (50) | 13 (92.85) |
| Tasty | 7 (100) | 5 (100) | 2 (100) | 14 (100) |
| No Adulteration | 9 (75) | 5 (83.33) | 0 (0) | 14 (100) |
| Less expensive | 5 (41.66) | 3 (50) | 2 (100) | 10 (71.42) |
| Ingredients are locally produced | 8 (66.66) | 5 (83.33) | 1 (50) | 14 (100) |

Numbers in parenthesis are percentage.

All respondents belonging to the Hindus and Christians of Thrissur who gave preference to traditional foods indicated that they preferred traditional foods because of their health benefits and some of the Christians preferred traditional foods since they are very tasty. Most of the respondents who preferred traditional foods indicated that they preferred traditional

foods since they are not adulterated. Among 14 respondents who preferred traditional foods 92.85 and 100 per cent of respondents considered that they are healthy and tasty and 100 and 100 per cent preferred traditional foods due to their purity without any adulteration and low cost.

Aneena, ER in 2009 reported that all respondents of Kerala Brahmin, Tamil Brahmin, Hindus of Palakkad and Christians and majority of Ezhava, Scheduled Caste and Muslim respondents preferred traditional foods mainly due to their health benefits, low cost and palatability. This is a strong evidence of the solid acquaintance towards the nostalgic tastes of their homeland. In a study conducted by Shyna (2001), it was seen that more than 70 per cent of respondents preferred traditional foods due to their variety, purity and palatability.

### 4.1.3 Frequency of preparation of traditional foods (breakfast, lunch, dinner)

The frequency of preparation of different traditional foods by the different communities for breakfast, lunch and dinner are given in table 6.

Table 6: Frequency of preparation of traditional foods for breakfast, lunch and dinner.

| Frequency | Christian (n=12) | Muslim (n=6) | Hindu (n=2) | Total (n=20) |
|---|---|---|---|---|
| Daily | 9 (81.82) | 6 (100) | 2 (100) | 17 (85) |
| Weekly thrice | 2 (16.66) | - | - | (10) |
| Weekly twice | 1 | - | - | (5) |

Numbers in parenthesis are percentage

It was found that 85% of respondents prepared traditional foods daily. Majority of respondents from all the community prepared traditional foods daily. Remaining 10% of respondents prepared traditional recipes weekly thrice. Only one them preferred preparing traditional foods weekly twice.

Traditional food items which have been time tested and regularly prepared for centuries were still prepared and consumed by all respondents. Aneena, ER in 2009 reported that more than 80 per cent of respondents of different communities except Ezhavas and Muslims prepared traditional foods frequently for breakfast. Shyna (2001) also indicated that traditional breakfast items were prepared upto four times in a week by majority of respondents in different communities of Thrissur district. All the respondents prepared traditional food items daily for lunch which indicated that the respondents insisted upon an indigenous lunch.

### 4.1.4 Frequency of Preparation of Health foods

Table 7: Frequency of preparation of health foods

| Frequency | Christian (n=12) | Muslim (n=6) | Hindu (n=2) | Total (n=20) |
|---|---|---|---|---|
| Occasionally | 5 (41.67) | 4 (66.67) | 2 (100.00) | 14 (70.00) |
| Never | 7 (58.33) | 2 (33.33) | - | 6 (30.00) |

Numbers in parenthesis are percentage

Details of the frequency of preparation of different health foods by different communities indicates that majority of Hindu (100%) community prepared traditional foods at home. Majority of Christian (58.33%) community did not prepare traditional healthy foods at home. About (66.67%) of Muslims respondents indicated that they prepared traditional health foods at home occasionally.

Traditional health food items have been prepared by the different communities like Christian, muslim and hindi. Accoring to Aneena, UR in 2009 reports states that majority of the people in different community occasionally prepares healthy foods. According to the respondents, majority of the people in the community occasionally prepares healthy foods (70%) and the rest (30%) will never prepare traditional healthy foods.

### 4.1.5 Traditional foods prepared during special occasions

Traditional foods prepared during special occasions by different communities are detailed in table 8.

Table 8. Traditional foods prepared by different communities on special occasions

| Occasions | Items |
|---|---|
| Marriage | Biriyani, Neychor, Pathiri, Meat Preparations, Sadhya |
| Death | Kanji |
| 7th day after demise | Vegeterian meals |
| 40th day after demise Annual Remembrance day | Non Vegeterian Meals |
| Betrothal | Traditional Non Vegetarian Christian foods |
| Baptism | Sadhya and Traditional Non Vegetarian Christian foods |
| Birthday | Non vegetarian meals |
| Holy Communion | Traditional Non Vegetarian Christian foods and sadhya |
| 40th day of Demise | Ghee rice and Beef curry |
| Eid | Biriyani, Ghee rice, Non vegetarian curry |
| Ramadan | Pathiri and non-vegetarian curry, Non vegetarian meals/ ghee rice/ biriyani with non-vegetarian side dishes. |
| Death | Adiyanthira Sadhya |
| Peridal | Sadhya |
| Shradham | Shrada Sadhya, Ellunda, Appam |
| Choroonu | Sadhya |

It was seen that different foods like Sadhya, Biriyani, Ghee rice and Vegetarians and Non Vegetarians curries have been prepared by the communities.

In Christian community on the previous day of marriage, a dinner with rice and botti (curry made up of intestine of cattle) varutharacha curry and puzhukku with plantain. Other traditional item called Paachoru along with meat curry will be served on the marriage day for breakfast. Serving avilosu podi, achappam and kuzhalappam along with paachoru were also common among Christian community on marriage and betrothal. After marriage, a sadhya with non-vegetarian side items will be served. When there is a death in the family, Kanji, thoran and upplitathu will be prepared and served to the family member after cremation. For both annual remembrance and 40$^{th}$ day of demise, a normal and traditional sadhya will be served to family member and relatives

In Muslim community, mainly prepares biriyani, neychor, pathiri, and non-vegetarian curries. Traditionally, Neychor, pathiri beef curry and other meat preparations will be included in the feast given to the family members or guest during marriage occasion. During puthiyapla salkaram, which is organized in bride's house after marriage, dishes like unnakkaya, muttammaala, kozhi nirachathu, tharippola and different types of pathiri are served. On the death of family member, kanji like kanji or cooked rice will be served along with vegetarian curries. On the 40$^{th}$ day of demise ghee rice and beef curry will be prepared and distributed to close relatives and family members.

In hindu community, kerala sadhya, the legendary vegetarian feast was serve during marriage, birthday, peridal, chooronu. The marriage sadhya consist of rice, sambhar, morucurry, pulincurry, puzhukku, pulinji and pickle was served. For chooronu ceremony, cooked and mashed raw rice was fed to the child and cooked rice with pulincurry and puzhukk was served to the guest. During death, fasting was observed until cremation, after which kanji or black tea prepared at nearby house was served to the family members. On the

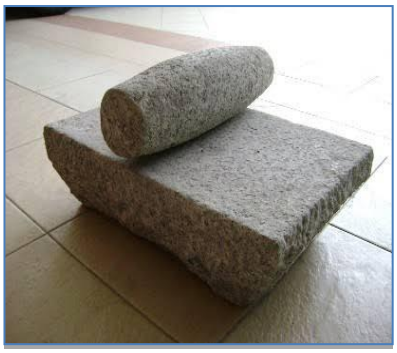
16th day of death of a family member, adiyantharam was conducted with sadhya almost similar sadhya to marriage sadhya avoiding pappadam, plantain and payasam.

### 4.1.5 Traditional kitchen utensils and equipment's used by different communities

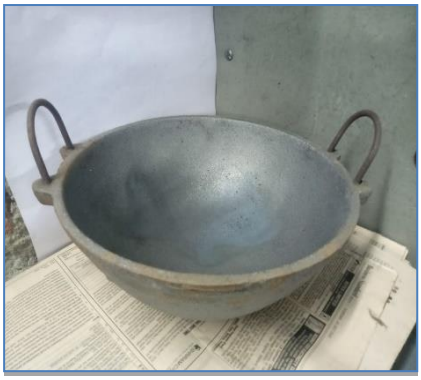
Information on traditional household utensils and equipment's used were collected and the list is present in Table 9. It was seen that different traditional kitchen utensils like Manchatti, Appachatti, Kuzhi Uruli etc. were used by the families.

Aneena, ER in 2009 reported that majority of respondents are still using Kuzhi uruli (66.4%), Manchatti (64.37%), and Nazhi (60.73%). Among the different communities also, all the respondents of Christian are still using Appachatti and Pattani cheppu and all the respondents of Muslim use Kalchatti and Kuzhi uruli. All respondents of Hindu still use Neyyuruli, Nazhi.

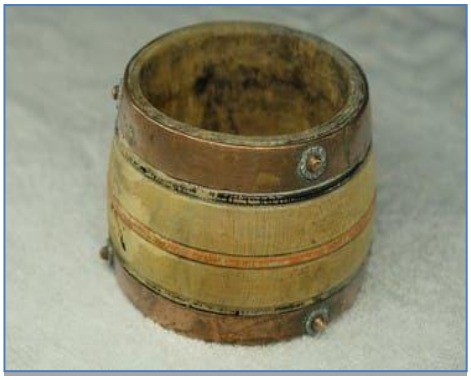
Manchatti



Arakallu

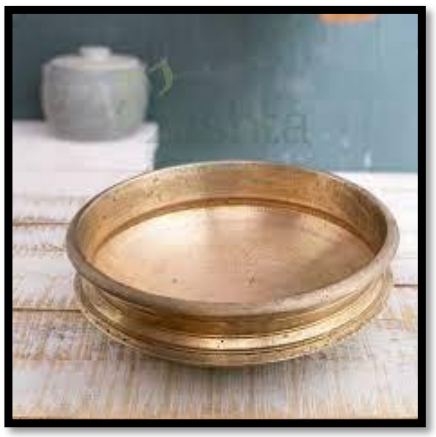


Cheenachatti

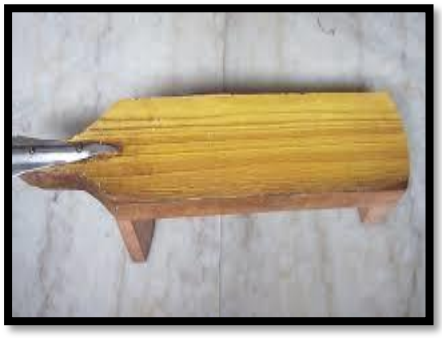


Edangazhi

Kuzhiuruli



Neyyuruli



Chirava

Ural and Ulakka

Table 9

| S.No | Kitchen utensils and Equipments | Purpose of Use |
|---|---|---|
| 1 | Appa chatti | Making vellayappam |
| 2 | Cheena chatti | Cooking and frying |
| 3 | Edangazhi | Measuring food items |
| 4 | Kalchatti | Preparing curries |
| 5 | Kuzhi uruli | Preparing Kuzhiyappam/Unniyappam |
| 6 | Manchatti | Cooking |
| 7 | Mara pathi | For keeping curries before serving |
| 8 | Nazhi | Measuring food items |
| 9 | Neyyuruli | For boiling butter and keeping ghee |
| 10 | Otturuli | Boiling, Cooking, Roasting, Frying |
| 11 | Pattani cheppu | Making appam |
| Equipments | | |
| 1 | Aattukallu | Wet grinding |
| 2 | Ammi | Mashing and grinding |
| 3 | Chirava | For scraping coconut |
| 4 | Koondani | Dehusking and crushing of grains |
| 5 | Muram | Grading, sorting and cleaning |
| 6 | Ural and Ulakka | Pounding |

Major kitchen equipments used by the families included ammi, aatukallu, koondani, and muram.

### 4.2 Chemical composition of selected traditional food

Nutritive Values

Chemical composition of traditional food products (per 100g)

| Sl No | Name of foods | Energy (kcal) | Carbohydrate (g) | Protein (g) | Fat (g) | Calcium (mg) | Iron (mg) |
|---|---|---|---|---|---|---|---|
| 1 | Neypathal | 418.07 | 55.69 | 13.21 | 16.58 | 61.39 | 3.67 |
| 2 | Velappam | 362.12 | 57.6 | 7.78 | 10.76 | 10.1 | - |
| 3 | Maniputtu | 550.64 | 59.01 | 16.68 | 28.97 | 58.03 | 4.48 |
| 4 | Ari Unda | 496.9 | 71.02 | 14.55 | 17.83 | 111.58 | 6.17 |
| 5 | Peecham podi | 182.7 | 33.5 | 2.31 | 3.91 | 0.64 | |
| 6 | Kinathappam | 235.9 | 13.14 | 1.01 | 19.92 | 0.8 | 0.11 |
| 7 | Beef thengakoth olathyathu | 422.02 | 1.09 | 29.4 | 11.13 | 69.84 | 18.83 |
| 8 | Injipuli | 287.31 | 46.79 | 18.31 | 12.41 | 54.55 | 2.19 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | Unniyappam | 530.75 | 83.29 | 19.62 | 37.81 | 53.69 | 6.86 |
| 10 | Elanji | 259.25 | 47.03 | 19.55 | 18.86 | 0.37 | 4.72 |

The highest total carbohydrate content was observed in unniyappam (83.29%) followed by Ari unda (71.02%) and Velappam (57.6%). Beef thengakoth had the lowest total carbohydrate content of 1.09 per cent.

Protein content of the foods varied from 1.01 to 29.4 percent with the highest protein content in beef thengakoth and the lowest in kinnathappam. More than 10 per cent protein content was observed in beef thengakoth (79.4%), injipuli (18.31%) unniyappam (19.62%), falanji (19.55%), neypathal (13.21%), maniputtu(16.68%), ari unda(14.55%). Protein content of kinathappam, peecham podi, velappam varied from 1.01 to 7.78 per cent.

Among the traditional foods analysed for fat content unnyappam had the highest fat content of 37.81 percent followed by maniputtu(28.97%), kinathappam (19.92%), flanji(18.86%), ari unda (17.83%), neypathal (16.58 %), inj puli (12.41%), beef thengakoth (11.13%) and velappam (10.76%). Less than 4 percent fat was observed in peecham podi (3.91%).

The calcium content varied from 0.37 to 111.58 mg per 100 g with the highest content in ari unda and lowest in elanji. Above 50 mg of calcium per 100 g was found in maniputtu (58.03 mg), neypathal (61.39 mg), beef thengakoth (69.84 mg), inji puli (54.55 mg), unniyappam (53.69 mg), flanji (64.79 mg), ari unda (111.58 mg).

Velappam, peecham podi, kinnathappam had less than 2 mg of iron per 100 g of food. Velappam and peecham podi were found to be 0. The iron content of 100 g of foods varied from 0.11 mg to 18.83 mg with the highest and lowest contents in beef thengakoth and kinathappam respectively.

Discussion

Ten traditional foods were evaluated for chemical constituents. Chemical composition of replicated traditional foods revealed that most of the traditional foods are rich in certain macro and micro nutrients. The evaluation of nutrient content showed a variation in nutritional composition among the traditional foods due to the variation in the ingredients used for the preparation.

Traditional foods like ari unda, maniputtu and uniappam which were prepared using different grains and pulses were found to be rich in total carbohydrates. Sharon et al. (2006) also reported high carbohydrate content in traditional foods of Kerala which varied from 24 to 79 per cent.

The highest protein content was observed in elanji and beef thengakoth. Sharon et al (2006) indicated protein content in the range of 2.36 to 9.41 per cent in traditional Kerala foods. High fat content was observed in unniyappam which is a deep fried item. In a study on mathi, a traditional fat fried food, Kalra et al. (1996) observed a fat content in the range of 30 to 45 per cent.

Among the replicated traditional foods, the calcium content varied from 0.37 to 111.58 mg per 100 g with the highest contentin ari unda and lowest in elanji. The major reason for the lowest calcium in elanji might be due to the use of maida, a refined food item as the basic ingredients. Iron content of most of the traditional foods was more than 2 mg per 100 g, mainly due to the use of jaggery and red meat as the ingredients which are good sources of iron.

# 5. SUMMARY AND CONCLUSION

The study entitled "Traditional Recipe of Kerala "was taken up with the objectives of identifying and collecting information on the various traditional foods of central zone of Kerala particularly Thrissur and documenting the traditional foods, their mode of preparation and developing the nutritive value of selected traditional foods. The study was conducted in Thrissur district. Chalakudy, thalikulam, vadanapilly, perinjanam, kodungallur, varakkara, kuriachira, ollur, mannuthy, irinjalakuda were the locations selected for the study. Senior citizens who possess the details of traditional food items and preparations in each locality were selected as the respondents. The respondents were categorized based on the communities they represent.

Details of traditional food habits with respect to preference for traditional foods, the reasons for the preference, frequency of preparation of traditional foods, traditional foods prepared during special occasions festivals/rituals and traditional foods included for breakfast, lunch, dinner, and snacks were collected from the selected respondents. The food ingredients were quantified and measured using certain measuring cups and spoons and prepared at home according to the preparation list obtained from respondents at each location. The observations were made later on the basis of preferences, reasons for preference and frequency of preparations with the help of questionnaires.

Majority of the respondents preferred traditional foods due to their health benefits and palatability. Most of the respondents prepared traditional foods for breakfast and lunch and also prepared different traditional snack items. Most of the respondents did not prepare traditional health foods at home due to the laborious procedure involved in the preparation and the commercial availability of these products.

Respondents belonging to different communities prepared various traditional foods during special occasions, festivals/rituals. Most of the respondents included traditional food items for breakfast and lunch. Changes were observed in the traditional food pattern and traditional foods over different years with respect to ingredients, method of preparation and vessels/ utensils used for preparation. The recent trend of food consumerism was portrayed by the increased frequency of eating out habits, purchase of instant mixes and bakery.

From the traditional food items collected, ten traditional foods namely neypathal, vellappam, maniputtu, ari unda, peecham podi, kinnathappam, beef thengakoth ularthiyathu, injipuli, unniyappam, elanji which were used, nutritionally viable were selected and prepared at home. Nutritive value evaluation of these foods was conducted.

Evaluation of the chemical composition of the traditional foods showed that most of the traditional foods are rich in certain macro and micro nutrients. From the present study, it was found that the selected traditional food items could be prepared under the prevailing conditions without change in their quality aspects. Hence, these technologies should be popularized as an attempt to conserve the traditional cuisines of Kerala.

Traditional foods play a significant role in maintaining the well-being and health of People. The traditional knowledge of food is considered to be the best for particular geographical condition. Changing food pattern can damage the good health of the society. Understanding the importance of good food habits of our own tradition and balanced diet has led to the emergence of traditional food in the recent times and is being used widely in many homes. Traditional foods are free from additives, chemicals and many things we find in food today. People go back to the traditional ways of eating to maintain a healthy, balanced life.

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## APPENDIX

### Questionnaire for Traditional Recipe

1. Name :

2. Age :

3. Sex : Male Female

4. Mostly used traditional food item for breakfast?

……

5. Mostly used traditional 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 occasions?

……

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

Yes No

11. If yes, what is it? ……..

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

…….

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

……

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

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

16. How often do you prepare the traditional food ?
(Daily/Weekly thrice/Weekly twice )

17. How to keep seasonal food intact for a long time?

18. What were the different dry products used for lunch/dinner?
[papads/vattals/vadakams/kondattams/others]

19. Do you make it from home?
Yes/ No

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