

EXPLORATION OF NUTRIENT CONTENT OF TRADITIONAL RECIPES OF TAMIL NADU WITH THERAPUETIC PROPERTIES

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ABSTRACT

India culture and heritage is filled with multiples of uniqueness, naturality, goodness and identity that are specific to each region. Be its values, customs or its own food habit- Tamil Nadu a known state for its mixture of flavours in food, has many traditional foods of high therapeutic values. Lack of systemic procedures and the advent of frequent eating out culture have made these traditional foods to take a back seat. So original Traditional therapeutic recipes (150) were surveyed and classified for **nine** therapeutic conditions namely Cold (15), Cough (16), Constipation (33), Diabetes (12), Febrile condition (4), Indigestion (4), Ulcer (15), Multi Therapeutic condition (47) and during Convalescent period (4) and were standardized. The standardized recipes were further tested for its acceptability by a panel of 20 members using a "Score card". Since all the 150 recipes were accepted by scoring method of traditional therapeutic recipes was calculated for both micro and macro nutrients using the nutritive of Indian food developed by (NIN).

KEYWORDS: Traditional Recipes of Tamil, Therapeutic Recipes, Nutrient Content

INTRODUCTION

India is a cradle of wonderful promising traditional systems of medicine. The forefather's of Indian medicine believed nature as a cure for any disease condition System of medicine like siddha, Ayurveda and Unnani are being repeatedly explored even today. The World Health Organization (WHO)¹ defined health in its broader sense in 1946 as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Traditional medicine may include formalized aspects of folk medicine, i.e. longstanding remedies passed on and practiced by lame people. Practices known as traditional medicines include Ayurveda, Siddha , Unani, ancient Iranian medicine, Irani, Islamic medicine, traditional Vietnamese medicine, traditional Chinese medicine, acupuncture, Muti, Ifá, traditional African medicine, and many other forms of healing method.²

Siddha Medicine - one of the oldest medical systems known to mankind is claimed to revitalize and rejuvenate dysfunctional organs that cause the disease and it is believed that this system of medicine maintains the ratio of vata, pitta and kapha. Leaves, flowers, fruit and various roots mixed with different proportion forms the basis for medical therapy.³

The treatments of Siddha medicines could be further categorized into following categories such as purgative therapy, emetic therapy, fasting therapy, steam therapy, oleation therapy, physical therapy, solar therapy, blood-letting therapy, yoga therapy, etc. Eighty percent of people in India use some form of traditional medicines, within the category of

Ayurveda, Siddha, Unnani, Naturopathy, Homeopathy.

Ayurveda meaning "life-knowledge" is a system of traditional medicine native to the Indian subcontinent and a form of alternative medicine, this early phase of traditional Indian medicine identified "fever (takman), cough, consumption, diarrhea, dropsy, abscesses, seizures, tumours, and skin diseases (including leprosy)" Treatment of complex ailments, including angina pectoris, diabetes, hypertension, and stones, also ensued during this period.⁴

Mounting health care costs and increased desire to maintain good health and quality of life have focused the researchers 'and public health scientists' attention on the diet, phytonutrients, disease prevention and health promotion.⁵

Biomolecules in the plants play a crucial role in health maintenance and promotion. In Asian countries; particularly, India, China, Japan and Korea; there is a long standing tradition and culture practices attributing healing properties to foods and plant materials. The foods have an extra-ordinary place in the realm of traditional cures as medicines.⁶

There is a treasure house of knowledge, which needs to be explored to establish the scientific basis of its benefits. As rightly pointed out by,⁷ common spices like turmeric, fenugreek, mustard, ginger, onions and garlic, and have a distinct place in folk medicine in several of Asian countries. Thus ingredients form an essential component of any traditional recipes.

Traditional foods (also known as indigenous recipes or folk recipes) comprise knowledge systems that are developed over generations within various societies before the era of modernization.

Traditional recipes purely relies on health practices and approaches of putting together plants, herbs, spices and fleshly foods in singular or in combination with a belief to treat and prevent illness or to maintain health and well being.⁸

As per the quotes of Hippocrates "*Let food be thy medicine and medicine be thy food*". Indian home with special reference to mother's of yester years of Tamilnadu have to their credits of using a variety of traditional recipes like Thuthuvalai rasam, Karpuravalli rasam, Ponnakanni keerai poriyal, Nattu kozhi soup, vazhathandu soup, Tulsi tea, Ingi thuvaiyal, Sukku malli coffee, Milagu paal (pepper milk), Chola dosai so on to cure or relive symptoms of diseases condition or to rejuvenate and to maintain good health.

Lack of systematic procedures, tedious methods of preparation, long working hours and frequent dinning out has given the current generation a little reluctance in adopting these recipes in their homes. It is also true that the current working women and homemakers are computer savy and greatly explore the information technology for multiple purposes ranging from education, entertainment and health information. Withthe objective to Collect traditional therapeutic recipes of Tamilnadu, Standardize the recipes, categorize the recipes according to the therapeutic properties and to the Calculate the nutrient content of the selected traditional therapeutic recipes the study was designed as follows

METHODOLOGY

Collection of Traditional Therapeutic Recipes

To collect the original traditional therapeutic dishes, the investigator developed a structured Performa . Using the structured Performa, **100** women between the ages of **50 to 65** years from the rural parts of Coimbatore were interviewed and a total of **120**, traditional therapeutic recipes with known potential therapeutic benefits were collected.

Apart from this a total of **30** recipes were collected from magazines and books of reputed standards, thus making a grand total of **150** traditional therapeutic recipes.

Categorization of Recipe

Initially based on the healing properties all the 150 the therapeutic recipes were classified for **nine** therapeutic conditions namely Cold (15), Cough (16), Constipation (33), Diabetes (12), Febrile condition (4), Indigestion (4), Ulcer (15) and during convalescent period (4). Therapeutic recipes were also categorized as vegetarian (**132**) and non- vegetarian recipes (**18**) and were further classified into meal wise as Breakfast/ dinner (**30**), mid-morning (**13**), lunch (**33**), side dish (**30**), tea time (**26**). Similarly the recipes were also categorized for non-vegetarian as mid-morning (**5**), lunch (**5**), and side dish (**8**).

Standardization of Traditional Therapeutic Recipes

All **150** traditional therapeutic recipes were standardized for one portion. The United States Department of Agriculture (USDA) defines a standardized recipe as one that “has been tried, adapted, and retried several times for use by a given foodservice operation and has been found to produce the same good results and yield every time when the exact procedures are used with the same type of equipment and the same quantity and quality of ingredients”

The standardized recipes were further tested for its acceptability by a panel of **20** members using a “numeric rating card”. The recipes which obtained a maximum score between 20 to 25 were rated as highly acceptable, 15 to 20 as acceptable and the score below 15 were rated as not acceptability. Recipe which obtained a score between 15 to 25 were selected for the study. Since, all the recipes standardized obtained a score in the range of 15 to 25 all the **150** recipes were considered.

Calculation of Nutrient Content

Using the nutritive value of Indian food developed by (“NIN”) the nutrient content of all the **150** traditional therapeutic recipes was calculated for both micro and macro nutrients namely Energy, Protein, Fat, Carbohydrate, fiber, calcium, Phosphorus, Iron, Carotene, Thiamine, Riboflavin, Niacin and Vitamin C. Based on the nutrient contents, the traditional recipes were categorized as energy rich, low energy, high protein, Low protein, iron rich, and calcium rich recipes.

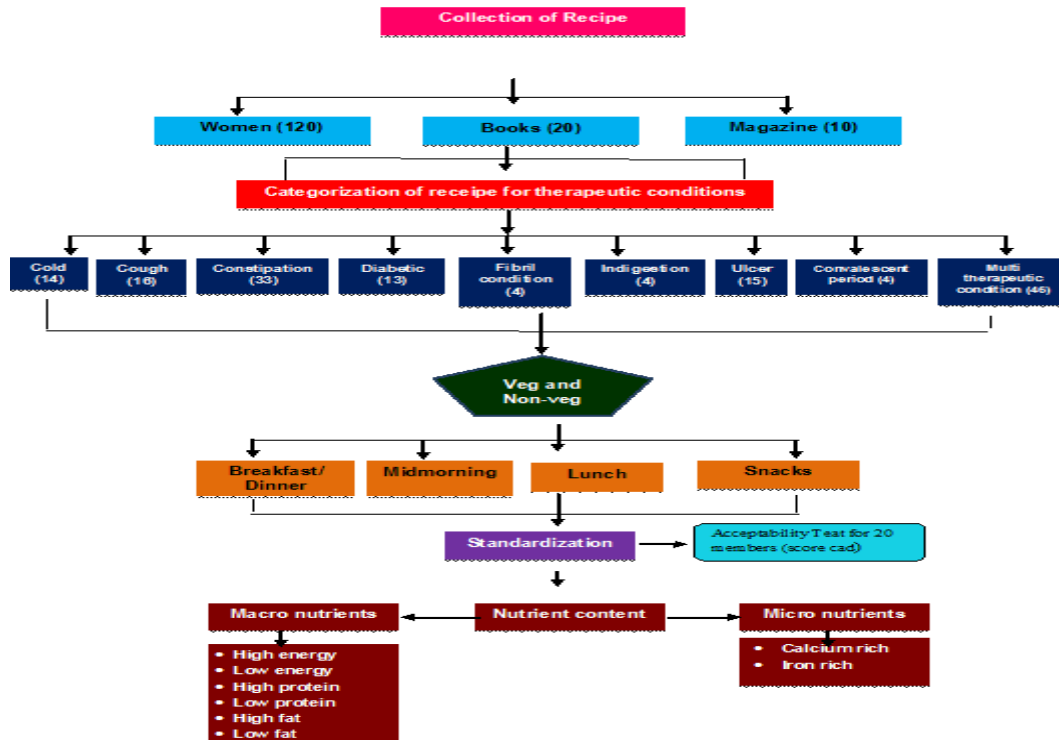


Figure 1: Methodology at a Glance

RESULTS AND DISCUSSIONS

Categorization of Recipes

Using a structured Performa 100 of women from rural parts of Coimbatore were interviewed on tradition therapeutic recipes. Recipes that they were familiar and believe to treat various therapeutic conditions were collected. Apart from this, recipes from books which feature special issues on tradition therapeutic foods were also collected.

Table 1: The Meal Wise Categorization of Recipes

S. No	Vegetarian		Non - Vegetarian	
	Interview schedule	Books/ Magazines	Interview schedule	Books/ Magazines
1.	Interview schedule	Books/ Magazines	Interview schedule	Books/ Magazines
2.	Breakfast (26)	Breakfast (4)	Breakfast (NIL)	Breakfast (NIL)
3.	Mid-morning (5)	Mid-morning (8)	Mid-morning (3)	Mid-morning (2)
4.	Lunch (28)	Lunch (5)	Lunch (5)	Lunch (NIL)
5.	Side Dish (26)	Side Dish (4)	Side Dish (6)	Side Dish (2)
6.	Tea time (21)	Tea time (5)	Tea time (NIL)	Tea time (NIL)
	Total (106)	Total (26)	Total (14)	Total (4)
	Grand Total 106 + 26 = 132		Grand Total 14 + 4 = 18	

A total of 150 recipes were collected by the investigator, out of which 120 original recipes were collected from women representing the rural part of Tamilnadu and another 30 recipes were collected from the book / magazines (Table 1). On the whole 132 vegetarian and 18 non - vegetarian recipes with potential therapeutic value were identified.

Nutrient Content of Traditional Therapeutic Recipes

Using the nutritive Value of Indian Food (NIN) the recipes were calculated

For all the macro and micro nutrients namely Energy, Protein, Carbohydrate, Fat, Fiber, Calcium, Phosphorus,

Iron, Carotene, Thiamine, Riboflavin, Niacin and Vitamin C. The nutrient content of traditional therapeutic recipes standardized for cold.

Table 2: Nutrient Content of Traditional Therapeutic Recipes for Cold

S. No	Recipes	Energy (kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
1	Thuthuvai * Rasam	98	2	8	2	8	89	57	8.9805	107.54	2.206	0.161	0.303	3.91
2	Jerra Rasam	85	3	11	2	3	38.68	26.765	9.876	91.56	0.081	0.172	0.533	6.91
3	Thipili Rasam*	100	3	9	6	3	83	57	70.185	111.44	0.106	0.2143	0.403	6.76
4	Kollu asam	115	3	11	7	3	96	72055	9.557	95.99	0.162	0.224	0.478	6.46
5	Mudakathan Rasam	100	3	9	6	3	83	57	70.185	111.44	0.106	0.2143	0.403	6.76
6	Mutton soup	97	10	22	7	2	75	75	1.25	4.5	0.09	0.07	304	1
7	Aatukal soup	97	10	22	7	2	75	75	1.25	4.5	0.09	0.07	304	1
8	Nandu soup	226	8	27	17	2	892.6	196.9	1.453	150.3	0.309	0.13	0.25	5.55
9	Nenjallumbu Soup	97	10	22	7	2	75	75	1.25	4.5	0.09	0.07	304	1
10	Nattukozhi soup	196	16	22	12	2	102.1	192.9	1.453	150.3	0.309	0.13	0.25	5.55
11	Kollu soup	17	2	3	0.025	0.265	14.35	154.55	0.338	3.55	0.021	0.01	0.015	0.05
12	Coconut milk	304	2	55	11	13	44	82	3	0	0.147	0.042	0.28	0.25
13	Thuthuvai thuvaiyal *	230	6	27	13	4	47.65	118.35	14.803	798.3	0.428	0.6995	0.98	3.8
14	Chicken fry	159	15	5	11	3	32.95	149.55	0.2545	1151.25	0.058	0.387	0.88	3.1

* Bioactive components: Thipili - Pipyahine , Thuthuvai - n- butanol

From the table (2) it is clear that Thenga paal (coconut milk) a recipe prepared with by combining Coconut milk extract with powder jaggery which is believed to give relief for the symptoms of cold and chest congestion contributed 304 kcal followed by this Nandu (crab) soup and Thuthuvai thuvaiyal contributed 226 and 230 kcal respectively.

The bio active components n- butanol and Pipyahine present in thuthuvai and thipili is believed to reduced chest congestion and relieve symptoms of cold.

Table 3: Nutrient Content of Traditional Therapeutic Recipes for Cough

S. No	Recipes	Energy (kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
1	Mosamosathan Adai	112	10	42	2	3	29.12	79.59	6.6675	753.7	1.0375	0.206	1.865	4.875
2	Katpuravalli Juice*	40	0.013	10	0	-	1.2	0.1	0.015	-	-	-	-	-
3	Omamrasam*	96	5	14	2	2	112.6	65.06	9.055	112.81	0.1102	0.2159	3.445	6.71
4	Millagu Rasam	272	3	46	13	10	132.75	223.03	21.947	1011.44	0.152	0.412	0.929	10.55
5	Katpuravalli Rasam*	100	16	9	6	3	83	57	70.185	111.44	0.106	0.2143	0.403	6.76
6	Kozhi Rasam	196	17	32	12	2	102.1	192.4	1.453	150.3	0.309	0.13	0.25	5.55
7	Mutton Kuzhambu	253	20	3	30	0.34	16	226.425	2.485	0.003	0.017	0.066	0.25	0.93
8	Chicken Kuzhambu	246	4	311	4	0.34	25.75	259.425	2.485	0.003	0.017	0.006	0.25	0.93
9	Murugai keerai Rasam	109	20	3	7	3	87	64	70.24	789	0.112	0.2193	0.483	8.96
10	Millagu Chicken	97	6	20	0.79	0.745	41075	193.65	0.62	54	0.004	0.175	-	-
11	Sukumalli Coffee*	145	6	20	6	5	235.7	133.75	30.57	312.6	0.579	0.173	3.405	0.15
12	Sukku Coffee*	145	8	22	6	5	235.7	133.75	30.57	312.6	0.579	0.173	3.405	0.15
13	Panakalkand Milk	160	7	23	9	0.985	273	199.9	1.34	164	0.11	0.453	0.26	4.6
14	Kuru millagu Milk	159	2	3	9	8	341.2	193.5	5.095	190.5	1.515	0.299	0.38	0.31
15	Sukumilagu milk*	3	3	4	2	4	6.30	3.93	0.71	9.2	0.022	0.035	0.11	0
16	Selavvu Rasam	100			6	4	87	51	9.073	351	0.117	0.231	0.203	6.76

* Bioactive components: Katpuravalli- Antipyretic and Leishmanial, Omam- Thymoquinone and carvacrol, Sukku- Gingerol and Phenolic

From the table (3) it is evident that Millagu chicken (20g), Kozhi rasam (12g), Chicken kuzhambu (20g) and Mutton kuzhambu (17g) a known recipe for relieving the symptoms for cough were found to be rich in protein content . In 2000, scientists at the University of Nebraska Medical Centre in Omaha studied the effect of chicken soup on the

inflammatory response in Vitro. They found that some components of the chicken soup inhibit neutrophil migration, which may have an anti-inflammatory effect that could hypothetically lead to temporary ease from symptoms of illness, Similarly Mutton Kuzhambu (253 kcal) had the maximum calorie content followed by chicken kuzhambu (246 kcal). Selavu rasam a known traditional food of Tamilnadu is prepared by boiling and seasoning a mixture of ground ingredients of black pepper, coriander seed, jeeragam, garlic and curry leaves. Selavu rasam, is not only given to children and adult with cough, but also to lactating mother after their child birth. Vitamin C was rich in recipes like Murugai keerai rasam (8.96mg), Millagu rasam (10.55mg) and Millagu rasam (6.76 mg). Also it was observed that Sukku millagu milk (2g), Sukku millagu coffee and Sukku Coffee (6g) was found to be low fat.

Table 4: Nutrient Content of Traditional Therapeutic Recipes for Ulcer

S. No	Recipes	Energy (Kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
1	Kovaikeerai Soup	94	3	6	8	5	77.19	78.3	0.945	26.67	0.046	0.058	0.58	4.25
2	Manthakalli Kuzhambu	181	0.952	5	3	0.34	109.5	93.175	7.61	0.063	0.017	0.1645	0.475	1.45
3	Kovaiikai Kuzhambu	173	2	4	3	0.84	27	90.675	2.675	78.002	0.052	0.4295	0.6	8.7
4	Arakeerai poriyal	82	3	7	6	3	272	54.5	2.035	18.75	0.051	0.023	0.63	2.7
5	Sukittikeerai poriyal	132	5	12	7	2	422	94.5	2.735	18.75	0.051	0.613	1.53	13.7
6	Murugaikerai poriyal	155	15	16	7	3	52	94.5	1.085	6798	0.111	0.073	1.43	222.7
7	Liver poriyal	71	15	7	7	2	16.3	63.48	1.333	864	0.017	0.535	0.37	0.4
8	Spleen poriyal	50	17	7	6	2	12.9	7.68	1.333	864	0.017	0.535	0.37	0.4
9	Kudal poriyal	89	-	-	27	-	9	144.75	-	-	-	-	-	-
10	Ponnakanni keerai poriyal	101	11	11	7	2	143.41	76.11	5.665	43.995	10.003	0.741	0.745	3.35
11	Kovaikeerai masiyal	76	5	5	6	1	150.3	30	4.76	578	0.057	0.0965	0.32	82.75
12	Kovaikeerai kootu	83	8	8	7	3	15.91	61.11	0.99	43.99	10.003	0.741	0.745	3.35
13	Kovaikeerai poriyal	136	15	15	6	5	522	84.5	1.865	1926	0.051	0.163	1.83	19.7
14	Ponnakanni keerai masital	76	5	5	6	1	150.3	30	4.7675	578	0.0575	0.0965	0.32	82.75
15	Kupakerai poriyal	13	3	3	0.165	3	100	15	0.5	98	0.047	0.035	0.195	57.25
16	Kupamemi keerai poriyal	68	9	9	2	3	684.5	114	8.65	98	0.047	0.0365	0.195	57.25

Out of 16 recipes standardized for Ulcer (table 4) six recipes namely Manathakali Kuzhambu (7.61 mg), Liver poriyal (1.333 mg), Spleen poriyal (1.333 mg), Ponnakanni keerai kootu (5.665mg), Kovai keerai masiyal (4.76 mg) and Kupamemi keerai poriyal (8.65 mg) were rich in iron. A portion of each recipe mentioned above had iron content more than 4.5 mg per serving. Scientific studies reveal that the bioactive components Saponin and Alkaloids present in manathakalli and kupamemi keerai are proved to heal scar and ulcer of mouth and stomach. The manathakalli and kupamemi are also used in Sidha and Ayurvedha preparation. Also it can be noted that all the 16 recipes were low fiber in nature.

Table 5: Nutrient Content of Traditional Therapeutic Recipes for Convalescent Period

S. No	Recipes	Energy (Kcal)	Pr (G)	Cho (G)	Fat (G)	Fib (G)	Calcium (Mg)	Phosphorus (Mg)	Iron (Mg)	Carotene (Mg)	Thiamine (Mg)	Riboflavin (Mg)	Niacin (Mg)	Vit C (Mg)
1	Navarathna Kanjee (sweet)	133	12	48	7	2	64.3	192.6	3.347	45.5	0.581	0.107	1.95	0
2	Navarathna kanjee (salt)	79	12	18	18	2	94.3	36	3.447	45.5	0.581	0.017	1.95	0
3	Ulutham kanjee	70	5	69	0.28	11.92	82.8	1.72	0.76	0.58	0.084	0.04	0.4	0
4	Venthaiya kanjee	34	3	5	0.58	0.72	16	37	0.65	9.6	0.03	0.02	0.1	0

The caloric content of Navarathna Kanjee (sweet and salt) was found to be 133 and 79 respectively (table 5). Navarathana kanjee a preparation that includes nine different ingredients namely rice, kambu, cholam, sesame, wheat, ragi, barley, green gram and Bengal gram is normally suggested to improve stamina and immunity due to its proteon quality.

One serving of Navarathana kannjee (Sweet and Salt) gives 12 gram of protein for each recipe. The preparation is mainly given to children and adolescence during convalescent period.

Nutrient content of traditional therapeutic recipes for Diabetic

Table 6: Nutrient Content of Traditional Therapeutic Recipes for Diabetic

S. No	Recipes	Energy (kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
1	Venthaiya Dosai (3 no's)*	256	10	70	2	2	45	172.5	1.975	24	0.115	1.332	1.225	0
2	Venthaiya Idli (3 no's)*	256	10	70	2	2	45	172.5	1.975	24	0.115	1.332	1.225	0
3	Vazhathandu soup	152	3	25	11	2	92	72.9	1.728	150.3	0.53	0.1345	0.3	0
4	Arugampul juice*	6	0.1	2	0.09	0.17	7	1	0.06	0	0.002	0.001	0.01	3.9
5	Vazhathandu Poriyal	155	0.35	11	16	2	19.5	89.5	1.21	18.75	0.0765	0.07	0.825	6.225
6	Paavakaai Poriyal	76	2	5	6	2	22	59.5	0.54	81.75	0.089	0.068	0.78	46.7
7	Venthaiya Kuzhambu*	213	11	18	13	5	106.3	172.5	5.35	814.35	0.192	0.885	7.335	4.15
8	Venthaiya Keerai Porriyal*	112	6	9	7	2	407	75.5	2.165	2340.235	0.091	0.333	1.43	54.7
9	Vazhathandu Juice	21	0.25	5	0.05	0.4	5	5	0.55	0	0.01	0.05	0.1	3.5
10	Poondu Kuzhambu	213	5	13	11	3	65.8	142.2	3.968	814.05	0.189	0.1426	1.335	3.5
11	Paavakaai Kuzhambu	196	5	8	11	3	71.3	97.5	3.8778	821.85	0.1105	0.8385	1.185	6.15
12	Veapam poo Rasam *	100	3	9	6	3	83	57	70.185	111.44	0.106	0.2143	0.403	6.76
13	Alovera juice *	Alovera juice *												

* Bioactive components: arugampul - digoxine, veapampoo - nimbudin, alovera – Mucliginous polysaccharides, fenugreek – fenereekine, diosegenin.

All the thirteen recipes standardized for Diabetes, offered a fiber content of two to three grams. Beside the fibre present in the Arugampul juice, Venthaiya dosai, Venthaiya idli, Venthaiya keerai, Veapampoo rasam and Alovera juice, the bioactive component of Arugampul (digoxine), venthiyam (Fenugreek - fenereekine, diosegenin), veapampoo (Neem flower–Nimbudin), alovera (Mucliginous polysaccharides) were proved to have hypoglycemic effect. It was surprising to note from the recipe survey that our rural folk of Tamilnadu have been preparing and consuming these traditional recipes for ages together before the scientific exploration. *Since the nutrient content of alovera is yet to be explored the investigator was not able to calculate the nutritive value of the alovera juice

Table 7: Nutrient Content of Traditional Therapeutic Recipes for Febrile Condition

S. No	Recipes	Energy (Kcal)	Pr (G)	Cho (G)	Fat (G)	Fib (G)	Calcium (Mg)	Phosphorus (Mg)	Iron (Mg)	Carotene (Mg)	Thiamine (Mg)	Rioflavin (Mg)	Niacin (Mg)	Vit C (Mg)
1	Jeeraga kasayam	36	2	4	2	2	108	51.1	1.17	52.2	0.05	0.03	0.26	0.3
2	Tulsi tea*	18	0.935	2	0.75	0.6	54	25.55	0.585	26.1	0.275	0.018	0.13	0
3	Ingi kassayam	38	2	16	0.45	0.6	11.2	30	1.765	20	0.03	0.015	0.3	3
4	Millagu kanjee	88	3	23	3	2	127	68.3	2	108	0.009	0.028	0.25	0.1

*Bioactive components: Tulsi- Eugenol and Phenolic

Though the nutrient content (table 7) of recipes standardized for febrile condition was not caloric or protein dense, but the functional properties for these recipes were repeatedly explored scientifically. The Eugenol and Phenolic compound present in Tulsi dilute flum and relieve chest congestion. Ingi (ginger) kasayam a concoction prepared by boiling pounded ginger and coriander seeds in 250 ml of water and reducing it to ½ of its quantity is believed to give relief for fever and cold.

Table 8: Nutrient Content of Traditional Therapeutic Recipes for Indigestion

S. No	Recipes	Energy (Kcal)	Pr (G)	Cho (G)	Fat (G)	Fib (G)	Calcium (Mg)	Phosphorus (Mg)	Iron (Mg)	Carotene (Mg)	Thiamine (Mg)	Rioflavin (Mg)	Niacin (Mg)	Vit C (Mg)
1	Fresh Ginger tea	67	3	13	0.9	2	20	60	3.5	40	0.06	0.03	0.6	0
2	Cardomam Tea	70	5	7	5	2	121.3	91.6	0.62	53	0.072	0.36	0.18	2
3	Ingi Thuvaiyal	198	7	25	4	4	49.95	133.65	14	52.3	0.11	0.066	0.74	4.1
4	Maa Ingi Thuvaiyal	150	3	23	4	4	51.2	141.15	14.95	47	0.0975	0.3975	0.39	3.45

Out of four traditional therapeutic recipes for indigestion, ingi thuvaiyal and cardamom tea was found to have seven and five gram of protein, respectively. The volatile compound present in ginger is believed to smoothen the intestine and cushion the mucosal layer of stomach. Hence it is used as a homemade remedy for indigestion and stomach ailments.

Table 9(A): Nutrient Content of Traditional Therapeutic Recipes for Constipation

Recipes	Energy (Kcal)	Pr (G)	CHO (G)	Fat (G)	Fib (G)	Calcium (Mg)	Phosphorus (Mg)	Iron (Mg)	Carotene (Mg)	Thiamine (Mg)	Riboflavin (Mg)	Niacin (Mg)	Vit C (Mg)
Pasalai keerai soup	113	4	6	9	6	134.69	93.3	5.445	508.92	0.046	0.358	0.88	8.5
Valara keerai soup	35	2	5	2	2	77.5	35.68	1.259	80.38	0.029	0.0892	0.11	0.41
Murungai Keerai soup	44	3	6	2	2	81.8	105.68	2.109	758.38	0.035	0.0942	0.19	22.41
Ponakani keerai soup	42	3	6	2	2	82.5	41.68	1.422	92.98	0.029	0.1032	0.23	2.11
Pudina juice	52	0.21	12	0.15	0.5	51	15.6	4	405	0.0125	0.013	0.25	6.75
Arakeerai soup	37	2	5	2	2	80	38.68	1.439	80.38	0.029	0.0892	0.11	0.41
Pudina soup	47	2	6	2	2	127.4	51.8	5.159	485	0.0415	0.1022	0.36	7.16
Ragi vadai (sweet)	238	3	38	6	0.96	103	97.75	1.323	10.5	0.1	0.0895	0.69	0
Ragi Vadai (karam)	180	5	22	7	3	110	130.25	1.445	56	0.635	0.1295	1.205	3.6
Keerai vadai	145	7	10	11	3	100	130.25	1.445	56	0.635	0.127	1.59	88.1
Vazhpoo vadai	183	4	4	6	2	21.89	70	4.97	52.25	0.5425	0.177	1.09	7.6
Ragi roti	196	8	49	2	5	205.36	216.8	3.37	1521.76	0.529	0.674	2.065	8.65
Sirukeerai Masiyal	66	2	4	6	0.6	28.77	28.75	7.32	98	0.0475	0.0515	0.195	12.5
Pannakeerai Masiyal	58	0.55	3	6	0.6	22.5	15.02	0.5	98	0.047	0.0575	0.195	12.5
Kupakeerai Masiyal	67	2	3	6	3	105	28	5.775	98	0.04	0.0515	0.195	57.25
Arakeerai masiyal	69	2	4	6	1	113.8	28	13.985	98	0.0475	0.0515	0.195	12.5
Vazhapoo poriyal	151	3	9	17	3	30.5	105.5	8.66	32.25	0.0915	0.031	0.925	10.752
Valarakeerai poriyal	136	6	15	6	5	522	84.5	1.865	1926	0.051	0.163	1.83	19.7
Sirukeerai poriyal	96	4	8	6	2	263	79.5	27.535	18.75	0.057	0.023	0.63	2.7

Table 9(B): Nutrient Content of Traditional Therapeutic Recipes for Constipation

Recipes	Energy (kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
Ponnakanni keerai poriyal	136	6	15	6	5	522	84.5	1.865	1944.5	0.051	0.163	1.33	19.7
Agathikeerai poriyal	156	10	15	7	4	1142	104.5	4.735	5418.75	0.261	0.113	1.53	171.7

Table 9(B): Contd.,

Thuthuvilai thuvaiyal	137	3	22	4	3	44.95	118.65	14.37	42.3	0.095	0.0585	0.59	3.2
Vazhakai Poriyal	146	0.35	9	16	3	19.5	99.5	0.88	33.75	0.0915	0.037	0.876	14.752
Beetroot Thuvaiyal	148	4	24	5	4	49.525	132.4	14.667	42.3	0.105	0.081	0.69	5.7
Karuvpillai thuvaiyal	95	8	34	13	6	454.35	527.65	15.175	3822.8	0.46	0.1835	1.9	5.4
Kothumalli thuvaiyal	159	5	26	5	0.78	136.95	49.25	15.08	3501.3	0.952	0.1242	0.79	70.7
Pudina thuvaiyal	158	6	25	5	5	144.95	149.65	22.17	852.3	0.12	0.1903	0.89	16.7
Agathikeerai koottu	106	5	11	7	3	298.41	81.11	1.965	1393.995	10.055	0.713	1.045	45.6
Lotchakeerai Koottu	124	5	11	7	3	95.91	8.11	1.64	43.995	10.003	0.741	0.745	3.35
Sirukeerai Koottu	91	4	10	7	3	22.18	74.86	7.815	43.995	10.003	0.741	0.745	3.35
Arakeerai Koottu	94	5	10	7	3	106.91	74.11	10.615	43.995	10.003	0.741	0.745	3.35
Ponnakami Keerai koottu	101	5	11	7	2	143.41	76.15	1.397	523.995	10.013	0.786	0.87	73.6
Panakkerai Koottu	83	3	8	7	3	15.91	61.11	0.99	43.995	10.003	0.741	0.145	3.35

Out of seven soups standardized (table 9a&b) Pasaalai keerai soup had the highest fibre (6g) content. Similarly, Ragi vadai (7g), Keerai vadai (11g) and Vazhaipoo vadai (6g) were found to be fiber rich. Fiber helps in mobility of sigmoid colon and it add roughage to the fecal bulk and helps in the management of constipation. Since all green leafy vegetable are good source of iron, the iron content of all the keerai (green leafy vegetables) preparation ranged from 8 to 13 mg per servings.

Table 10(A): Nutrient Content of Traditional Therapeutic Recipes for Multi Therapeutic Condition

Recipes	Energy (kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
Ragi dosai	151	14	33	0.47	0.975	95.2	138.85	1.27	12.4	0.135	0.0665	0.66	0
Chola dosai	77	5	33	0.62	0.475	15.45	98.75	1.23	19.65	0.1315	0.051	1.445	0
Sama dosai	282	5	37	13	5	11	170	5.075	0	0.1625	0.07	1.8	0.25
kambu dosai	160	15	17	2	0.375	19.7	117.25	2.295	33.295	0.1125	0.0815	0.96	0
Gohumai dosai	86	4	18	0.425	0.49	12	88.75	1.25	7.25	0.1225	0.0425	1.25	0
Varagu dosai	108	13	23	0.32	1	12.575	66.75	0.357	1.9	0.1125	0.0302	0.635	0
Thinnai dosai	152	15	30	2	3	16.695	115.75	0.29	9.9	0.1775	0.296	1.185	0
Aadai	112	10	42	2	3	29.12	79.59	6.6675	753.7	1.0375	0.206	1.865	4.875
Gothumai roti	202	11	47	2	4	57.36	252.8	3.85	1515.26	0.564	0.845	3.665	8.65
Ragi puttu	82	2	18	0.32	0.9	86	95.6	0.975	10.5	0.105	0.0475	0.275	0
Thinnai putu	83	4	16	2	2	7.75	72.5	0.7	8	0.475	0.277	0.8	0
Varagu puttu	189	4	20	11	4	9.25	107	0.55	0	0.1775	0.0475	0.7	0.25
Sama puttu	282	5	37	13	5	11	170	5.075	0	0.1625	0.07	1.8	0.25
Gothumai kalli	170.5	7	35	0.85	0.95	24	177.5	2.45	14.5	0.245	0.085	2.15	0
Kambu kalli	181	6	34	3	0.6	21	148	4	66	0.165	0.125	1.15	0
Ragi kalli	164	4	36	0.65	2	172	1415	1.95	21	0.21	0.095	0.55	0
Ulutham kalli	180	9	31	3	2	101	156	2.3	9	0.21	0.1	1	0
Chola kalli	175	5	36	0.45	0.8	12.5	111	2.05	23.5	0.185	0.065	1.55	0
Sama paniyaram	360	103	71	4	6	67.26	276.15	7.1065	756.65	0.33	0.222	3.23	4.475
Cambu paniyaram	165	16	17	2	2	25.245	126.85	2.641	59.05	0.1815	0.1120	1.048	4.05
Gothumai paniyaram	160	16	34	0.699	2	86.27	1416	1.891	333	0.2215	0.0926	1.723	4.05
Thinnai paniyaram	158	16	32	2	3	22.495	55.35	1.341	34.05	0.1315	0.3271	1.273	4.05
Vella paniyaram	149	12	35	0.145	0.075	29.2	53.25	0.935	1.9	0.03	0.019	0.385	0
Varagu paniyaram	114	14	25	0.4401	2	18.115	76.35	0.06635	26.05	0.124	0.0613	0.723	4.05
Karupatti paniyaram	154	12	36	0.195	0.075	418.7	58.75	0.295	1.9	0.03	0.019	0.385	0
Chola paniyaram	77	5	33	0.62	0.475	15.45	98.75	1.23	19.65	0.1315	0.051	1.445	0

Table 10(B): Nutrient Content of Traditional Therapeutic Recipes for Multi Therapeutic Condition

Recipes	Energy (kcal)	Pr (g)	CHO (g)	Fat (g)	Fib (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
Sundakaai kuzhambu	257	6	8	12	7	163.5	125.2	4.275	802.85	0.107	0.0816	1.06	4.15
Fish kuzhambu	182	5	3	3	0.34	9	121.675	2.485	0.003	0.017	0.0295	0.15	1.2
Karuvattu kuzhambu	182	5	3	3	0.34	9	121.675	2.485	0.003	0.017	0.0295	0.15	1.2
Mullikaai kuzhambu	164	0.655	3	3	0.34	7	75.675	2.485	0.003	0.017	0.0295	0.25	1.2
Idli podi	109	8	34	0.9	1	48.65	73.84	3.125	780.45	0.561	0.118	1.65	2.9
Groundnut chutney	123	14	15	2	2	14.65	81.25	2.136	413.75	0.5125	0.090	0.14	2.95
Groundnut podi	142	7	35	0.9	2	50.44	171.44	3.99	780.4	0.6585	0.1050	2.175	2.9
Karunai kelangu poriyal	118	2	16	16	3	28.5	34.5	0.83	57.75	0.089	0.023	0.88	2.7

Table 10(B): Contd.,

Nethuli karuvadu	* Nethuli karuvadu												
Thundu karuvadu	*Thundu karuvadu												
Blood poriyal	156	2	15.4	6	1.3	2.5	60	0.425	0	0.0125	0.025	0.2	0.25
Vatasarna keerai poriyal	4	0.55	3	0.09	0.6	17.5	15	0.5	98	0.047	0.0365	0.195	12.5
Panna keerai poriyal	90	4	6	6	3	123	69.5	15.035	247.9	0.515	0.243	1.33	0
Thandu keerai poriyal	45	4	0.5	1	6	397	83	3.49	5520	0.03	0.30	1.2	99
Sesame ladoo	240	5	31	11	0.725	365.5	102.75	2.4025	15	0.1525	0.35	1.1	0
Puffed rice ladoo	165	4	87	0.05	0.15	17.5	75.5	3.6275	0.005	0.105	0.005	2.05	0
Multigrain ladoo	506	5	61	55	0.56	23.5	47.1	4.6025	129.855	0.141	0.113	0.4	0
Pasipayaru ladoo	183	7	40	0.375	2	34	81.75	11.775	23.5	0.1175	0.0675	0.525	0
Thinnai ladoo	183	3	41	0.425	2	10.75	72.75	0.775	8	0.1475	0.277	0.8	0
Maladu	933	12	104	53	0.5	38	170.375	4.9	176.5	0.21	0.1	1	0

Out of Fourty Six recipes standardized (table 10 a &b) for Multi therapeutic condition , the recipes namely Ragi dosai (14g), Kambu dosai (15g), varagu dosai (13g),Thinnai dosai (15g), Cholam, Kambu and Gothumai paniyaram (16g) each and Sundaikaai kuzhambu (6g) were found to be rich in protein. Since all dosai, Puttu and paniyaram contain cereals they are rich in both calories and protein. *Since the nutrient content of Nethuli and Thundu karuvadu is yet to explore the investigator was not able to calculate the same.

CONCLUSIONS

The advent of westernization and frequent dinning out practice has made the tradition foods to take their back seat. Tamilnadu as such has a numerous traditional therapeutic foods with potential's to cure and relieve symptoms of various disease conditions (communicable and non- communicable). It is the duty of the researcher and academician to protect and promote our tradition therapeutic recipes for our future generation. Hence the results of the current serves as a promotional tool to popularize and educate our younger generation on the traditional therapeutic systems of medication in the form of recipes. The analysed nutrient content of recipes can serve as a useful resource for the food industries (Hotel Industry) who wish to re- introduce the traditional therapeutic recipes into the commercial market. The dietary departments in hospital can incorporate the above recipes in their diet recommendations to offer holistic traditional therapeutic remedies for various disease conditions.

Limitation of the Study

Since only limited studies have been taken up in this area, inadequacy of literature on traditional therapeutic foods for survey was experienced by the investigator.

The nutrient content for some of the traditional therapeutic foods like Karpuravalli, Thuthuvalai, Mullikaai etc., are yet to be explored and hence the investigator was not able to calculate the nutrient.

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