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Review Article

**REVIEW ON A TRADITIONAL FORMULATION FOR
“DIYAWEDIYAWA” (DIABETES MELLITUS)****Mohammed Shafee Fathima Sapra**Department of Unani, Institute of Indigenous Medicine, University of Colombo,
Rajagiriya, Sri Lanka**Article Received:** February 2021**Accepted:** February 2021**Published:** March 2021**Abstract:**

The traditional medical practice in Sri Lanka has long tradition with its root tracing back to pre- Arian civilization. It is practiced mainly as a traditional process. And there is a high degree of specialization in certain areas. Among them “Diyawedyawa” (Diabetes Mellitus) treatment occupies major place in the traditional system. There are numerous prescription which are used in the treatment of diabetes and they vary according to the physicians who treat them. It is a significant fact that although the properties in the herbal medicines are playing a vital role in treating diabetes. Therefore, the objective of this study to identify and describe the properties with reference of its chemical constituents of the special choorna (powder drug) for the management of diabetes from a selected traditional physician. Mainly this formulation contains five ingredients, which can help to reduce the sign and symptoms of diabetes, such as poly urea, polydipsia and polyphagia. A comprehensive follow up clinical trial study needed in near future to scientifically prove the effectiveness of these ingredients.

Keywords: *Diyawedyawa, Choorna, Traditional system, poly urea, polydipsia and polyphagia.*

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1. INTRODUCTION OF TRADITIONAL MEDICINE:

The medical practice in Sri Lanka has long tradition with its root tracing back to pre- Arian civilization. Its cultural heritage comprising indigenous wisdom, religious concepts of Buddhism and body knowledge of *Ayurveda*. It's said that the system of *Ayurveda* medicine been established by the *Aryans* in the 3rd century B.C. in India. The earliest system of medicine functioned before the establishment of *Ayurveda* medicine in Sri Lanka. But hardly any documental information of the practice of indigenous system of medicine in pre historic period.

Traditional Medicine in Sri Lanka has its own indigenous scheme. A feature of informal healing which were evidenced in the reflections is that it is not heavily influenced by the prevailing education system (most healers have not been to school or have been to only Primary school; as a result, their view of the world is not based on Western thinking. Most of the informal healers still live in the rural areas & have not been adopted an urban lifestyle. Traditional Medicine is also called as *Hela Wedakama*.

History of *Hela Wedakama* comes from the great King Ravana. The first historical books of medicine in Sri Lanka were written about 5000 years ago, by the great King Ravana¹. His best-known books are *Arkaprakasaya*, *Nadivignananaya*, *Kumarathanthraya* & *Udisashasathraya*². As most of the traditional practitioners still worship the King Ravana in prior to start their treatments. Some forms of indigenous medical treatments have existed in Sri Lanka long before the arrival of King Vijaya & Indians. Later the King Buddhadasa, the most well known of physicians, wrote the comprehensive manuscript *Sarartha Sangraya* in 398AD. Until today, this is the valuable manuscript used by Sri Lankan physicians as reference.

There is evidence that we have been inherited to a glorious history of indigenous medicine in our country. But it was set back during the latter part of the 16th century due to internecine war.

What is designated as indigenous medicine was originated in Sri Lanka probably during the pre-historic time and expanded and developed independently on its own way. It is practiced mainly as a traditional process. It was always inherited by the son from the father. Therefore, it was guarded and preserved as a family heirloom. For the same reason

there is a high degree of specialization in certain areas. Such as fractures and dislocations, ophthalmology etc. The specialization in special fields in indigenous medicine are refer as *Paramparika Vedakama* (Traditional Treatment) for the conveniences may be enumerated as follows;

- *Es Vedakama* (Ophthalmology)
- *GediVana Vedakama* (Treatment of boils and carbuncles)
- *Sarpa Visha Vedakama* (Toxicology)
- *Pissu Balu Vedakama* (Hydrophobia Treatment)
- *Vidum Pilissum Vedakama* (A system similar to Acupuncture)
- *Kedum Bindhum Vedakama* (Treatment of Fractures and Dislocations)
- *Adivasi vedkama* (tribal medicine).

In the past, Sri Lanka traditional physicians did not charge for their service or for medicaments unless the patients offered articles or other things as a thank gift of gratitude. They would never break their ethical values based on Buddhism as they believed that this was 2nd valuable thing which they could offer according to the Buddhist religious philosophy.

In the early part of the 20th century there was movements commenced for the revival of traditional systems on broad basis, along with the wake-up movements for political independence. Due to the untiring effort of some patriotic traditional practitioners and national leaders the government had to look in to the matter and also there was a demand from the legislative council for allocation of money for the training of traditional physicians. A committee was appointed to study the feasibility of this resolutions. This committee recommended state to constitute a Board of Indigenous Medicine to handle the matters concerning the training of traditional physicians and to establish a hospital.³

1.1 Introduction to Diabetes Mellitus in Traditional Medicine

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys and nerves. The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin. In the past three decades the prevalence of type 2 diabetes has risen dramatically in countries of all income levels.⁴ Type 1 diabetes, once known as juvenile diabetes or insulin-

dependent diabetes, is a chronic condition in which the pancreas produces little or no insulin by itself. For people living with diabetes, access to affordable treatment, including insulin, is critical to their survival. There is a globally agreed target to halt the rise in diabetes and obesity by 2025.⁵

About 422 million people worldwide have diabetes, the majority living in low-and middle-income countries, and 1.6 million deaths are directly attributed to diabetes each year. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades.

According to the traditional Medicine, Diabetes Mellitus that directly translates as “sweet urine” disease. And also, exhaustive description of the disease Prameha which ultimately progresses towards *Madhumeha* or the sweetness of urine in addition to Polyuria. Prameha comprises of a number of diseases with various physical and chemical changes in urine. It is also described that if not cured or treated properly, in due course of time, prameha changes into madhumeha. Indeed, when our blood sugar levels rise above a certain threshold, it spills over into the urine and can be detected. The ancient description of this disease includes an appreciation for the fact that derangements in body tissues takes place due to imbalance in metabolism

The faulty dietary habits & changing lifestyle of people are more prone to get some chronic illness. Major cause of most of the diseases arisen by irregular Agni (Improper digestion) and it can be easily vitiated by above food habits & lifestyle. All these impair the digestion & absorption.

Over eating, is one of the factors for creation of indigestible materials.⁶

Aim of this study, is to evaluate our traditional practices to overcome the non-communicable diseases. Because nowadays non-communicable diseases require more attention than others. Diyawediya (Diabetes mellitus) is one of the major non communicable disease. The diagnosis as well as prognosis based on strength of clinical features should be made at the earliest possible, so that the management could be fixed on.

2. METHODOLOGY:

This study mainly conducts with the interview with a traditional physician and other details collected through reviewing of Ayurveda classical text books,

reference books, review articles and computer database searches.

3. RESULT AND DISCUSSION:

The formulation belongs to Abdul Majeed Tradition and mostly interested to treat above diseases with some special medicinal packages. Those are mainly possessing the properties of Deepana & Pachana (digestive). Same while, with the medical practices some of the also have been used to obtain 80% -100% prognosis level. He also specially treated 1000s of patients of diyawediya in his 50 years of period. Most of their line of treatment are obtained through their constant practices. The cause, symptoms, prognosis and management of diyawediya were also described in detail in the Vedic texts thousands of years ago.⁷

Principles of management of Diyawediya

The management of a case is always challenging. The management practiced today is bound to be modified tomorrow. It always depends on need of the day. Whatever treatment modality ancient physicians practiced in several years ago is effective even today which requires a justified. Due to development in the science and technology, there is tremendous change in diabetes management. However, the principles behind every line of management if correct lay down would universally remain unchanged whatever be the means that may be adopted to achieve them. Management of Diyawediya mainly focus with herbal drugs, proper diet plan and proper exercises.⁸

Treatment for Diyawediya which are used by the traditional physician

1. Special choorna (Powder) for Diyawediya

- Kumbuk pothu (*Terminalia arjuna*)
- Madam pothu (*Eugenia jambolana*.)
- Kothalahimbutu (*Salacia reticulata*)
- Attikka pothu (*Ficus recimosa*)
- Kohomba pothu (Bark of *Azadirachta indica*)

-Take equal quantity of above drugs and make fine powder of each and mix well.

Add one teaspoon to boiled water and drink morning and evening.

2. Kashaya (Decoction) for Diyawediya

- Pitawakka (*Phyllanthus niruri*)
- Iramusu (*Hemidesmus indicus*)

Take equal 6 kalang and add 8 cups of water. Heat in mild fire Drink half a cup morning and evening.

3. Choorna 2

- Velmi (*Glycerrhiza glabra*)
- Kohombapothu(Bark of *Azadirachta indica*)
- Veniwelgeta (*Berberis aristata*)
- Ranawara pothu (*Cassia auriculata*)
- Heeng araththa (*Alphinia calcarata*)

-Take equal quantity of above drugs and make fine powder of each and mix well.

Add one teaspoon to boiled water and drink morning and evening.

This Choorana is used for madhumeha patient with una.

4. Pala ilai naar (*Artocarpus heterophyllus*) powder5. Pera leaves (*Psidium guajava*) choorna (powder) or Kashaya (Decoction)6. Wal amberalla (*Spondias pinnata*) fruit bark boiled water

7. Following drugs are given as a stat medicine for patient with high blood glucose level

a. Uluhal powder (*Trigonella foenum-graecum*)Madam eta powder (Seeds of *Eugenia jambolana*.)b. Wal koththamalli (*Scoparia dulcis*) Kashaya (Decoction)c. Boil akkapana (*Brophyllum pinnatum*) leaves and add sugar candy. Store in a glass bottle and keep in refrigerator. When drink take half cup of medicine and mix half cup of warm water.**Mix equal quantity**

8. for Diabetic wound

1. Oil for the wound

1. Attika

Botanical name: *Ficus recimosa*.

Sanskrit : Udumbara

English : cluster fig, Custer fig

Sinhala :Attikka

Tamil :Aththi

Part used : Stem bark, leaves, fruit, root, root-bark, milky juice



Fruits

Figure 4.1

- Kohomba thel (Neem oil)
- Kaha kudu (Turmeric powder)
- Palmanikkam (copper sulphate)
-heat well and store in a glass bottle. Apply on the wound by using cotton wool
- 2. Komila tender leaves- grind well and apply on the wound
- 3. Paste of unhealed wound
 - Eethana (*Cynodon dactylon*)
 - Marthondi leaves (*Lawsonia inermis*)
 - Wiyali inguru (Dried *Zingiber officinale*)
 - Kaluduru (*Nigella sativa*)
 - Kaha (*Curcuma longa*)
 - Kaha maduruthala (*Ocimum tenuiflorum*)
-Take equal quantity and grind well. Make paste and apply on the wound.
- 9. For strengthen body of the diabetic patient
- Take pure honey from kumbuk (*Terminalia arjuna*.) tree and add ground badam and pista and give one teaspoon morning and evening.

Justification of the Ingredients of special choorna for Diyawediya

Special choorna is the drug which is commonly used for the Diyawediya by the traditional physician.

- Ingredients of the choorna are as follows:
 - ✓ Attikka pothu
 - ✓ Kohomba pothu
 - ✓ Kothalahimbutu
 - ✓ Kumbuk pothu
 - ✓ Madam pothu

Chemical constituents: Leaves: Flavonoids, Tannin, Triterpenoids, Alkaloids

Stem bark: Bergerin (flavonoid), Kaempferol and Coumarin

Trunk bark: sterols like β -sitosterol, lupenol, and stigmasterol

Fruits: Glucan acetate, Glucanol, Tiglic acid, Taraxasterol, Lupel acetate

Latex: steroids like Euphol, Isoeuphobol, β -sitosterol acid

Action: Bark & root: astringent, Bark & fruit: astringent, carminative, stomachic, Bark, fruit & leaf: vermicide, Antidiuretic

Uses:

- Roots: -Used in dysentery, pectoral complication, and diabetes. And also applied in inflammatory glandular enlargement, mumps, and hydrophobia
- Root bark: Oil infused with root bark is good for eczema, leprosy, and rheumatism
- Bark:
- - Galactagogue, and useful in gynaecological disorders
 - Decoction of bark given for piles, ulcerative colitis, diarrhoea, dysentery, diabetes and asthma Bark powder used for diabetes.
- Fruit: -Used in Leprosy, menorrhagia, leucorrhoea, blood disorders, burns, intestinal worms, dry cough and urinary tract infection, Haemoptysis.
- Fruits boiled and strained use as gargle in sore throat.
- Leaves: - Used in Bronchitis, bowel syndrome and piles.
 - Decoction of leaves is used in wound washing and healing.
 - Ground leaves mixed with honey good bilious affection
- Leaf buds: skin infection
- Latex: -externally applied on wounds to decrease inflammation, pain, oedema and promote healing.
 - it is also used with sugar to reduce diarrhoea, dysentery, especially in children and improves the sexual power in males. -Use for haemorrhoids.

Justification:

β -Sitosterol isolated from stem bark is reported to have potent antidiabetic activity.

- ✓ Mechanism of action: After the preclinical and clinical studies, some mechanism of action

had been proposed through the anti-hyperglycaemic activity of the *F. racemosa* extract.

-On postprandial hyperglycaemia:

The extract reduced postprandial hyperglycaemia via increasing the viscosity of the intestinal contents, resulting in entrapment of the glucose molecules by the adsorption method, thereby reducing diffusion of glucose from the intestinal barrier to the blood stream.

-On glucose absorption:

The extract reduced glucose absorption via inhibiting carbohydrate hydrolysing enzymes (α -amylase, α -glucosidase, and β -glucosidase) and delaying the release of glucose into the blood stream.

-Utilization of glucose:

The *F. racemosa* extract controlled the plasma glucose level by regulating the glucose metabolizing enzymes in the glycolysis and gluconeogenesis pathways.

-Peripheral utilization of glucose:

This action was increased via the glucose uptake across target cells and secretion of insulin into the blood stream.

-Pancreatic β -cell regeneration:

It increased through synthesis and secretion of insulin into blood stream⁹.

2. Kohamba

Botanical name : *Azadirachta indica*.

Sanskrit : Arishta, Pakvakrita, Nimbaka.

English : Neem.

Sinhala : Kohamba.

Tamil : Vembu

Part used : Bark, leaves, fruit, root, seed and flower.



Figure 4.2

Chemical constituents: Azadirachtin, Nimbolinin, Nimbin, Nimbidin, Nimbidol, Gedunin, Salannin, And Quercetin Sodium, Nimbinate, Flavonoids, triterpenoid, anti-viral compounds and glycosides.

Action: Anthelmintic, antifungal, antidiabetic, antibacterial, antiviral, contraceptive,

and sedative. And also reduce aggravation of kapha and pitha dosha.

Treatment for: Fevers, skin ailments, wounds, cough, asthma, eye diseases, Intestinal worms, diabetic, leprosy, gingivitis, diseases of the heart and. Blood vessels and liver problems

Uses:

- Patients suffering from chicken pox are recommended to sleep on neem leaves.
- The gum of neem tree is used as a bulking agent to prepare special purpose food for diabetic patients. Its twigs are commonly used for cleaning teeth.
- A decoction can be prepared from the roots of neem tree and ingested to relieve fever.
- The paste of neem leaves is applied on skin to treat acne.
- Neem leaves extract is helpful in treating malaria and purifying blood.
- Neem is used in vitiated conditions of pitta, hyperdipsia, leprosy, skin diseases, eczema, leukoderma, pruritus, intermittent fever, wounds, and ulcers, burning sensation, tumors, tubercular glands, anorexia, vomiting, dyspepsia, intestinal worms, hepatopathy, cough, bronchitis, inflammation and fatigue.

Justification:

The mechanism of the antidiabetic properties of the neem had suggested that the antidiabetic properties of the neem extract may be related to the ability of the extract to stimulate sufficient production of insulin by the pancreas, that aided in the peripheral utilization of glucose in the cells, or a possible ability of the extract to regenerate the β -cells to carry out its functions. Neem leaves are loaded with flavonoids, triterpenoid, anti-viral compounds and glycosides, which may help manage blood sugar levels and ensure there is no surge in glucose.¹⁰

3. Kothala himbutu

Botanical name : *Salacia reticulata*.

Sinhala : Kothala himbutu

Part used : Fruit, root and stem.

Chemical constituents: stem bark: Triterpenes, hydrocarbons and sitosterol.

Root: Mangiferin, kotalanol, and salacinol. Thiocyclitol and other constituents like dulcitol, tannins, kotlagenin maytenfolic acid and soiguesterin.



Figure 4.3

Action: Astringent

Treatment for: Diabetes mellitus, Renal stones, Menorrhagia, Polyuria, Obesity

Justification:

Generally, the mechanism responsible for reducing plasma glucose is believed to be inhibition of alpha glucosidase in the intestine by kotalanol and salacinol. Reduction of fasting glucose, improvement in glucose handling following glucose loading is most likely explained by decreased insulin resistance mediated through increasing adinopectin, suppression of lipogenesis and increased lipolysis. Salacia showed significant improvement in glucose handling of diabetic and pre-diabetic patients.¹¹

4. Kumbuk

Botanical	: <i>Terminalia arjuna</i> .
Sanskrit	: Arjuna /kahuba
English	: Arjun tree
Sinhala	: Kumbuk
Tamil	: Marutham
Part used	: Bark, leaves, fruit, root and flower.



Habit of the species



Fruits

Figure 4.4

Chemical constituents: Tannin, Flavonoids, phenols, phytosterols, saponin and alkaloids.

Action: -Reduce aggravation of kapha and pitha dosha.

- Antioxidant, anti-inflammatory, anti-fungal and analgesic
- Heart tonic, improves aerobic endurance, manage cholesterol, blood pressure and blood sugar levels.
- Wound healing, liver and renal protective

Treatment for: Heart diseases, diabetes, fever, skin diseases, obesity, wounds, bone fracture, dysentery, piles, cough, leucorrhoea, candida infection

Justification:

- Arjuna fights chronic inflammation, whether it results from lifestyle factor, diet, or diseases like diabetes. This action makes Arjuna a powerful ally that can boost general health and well-being.
- Animal studies have found that this herb can significantly lower blood sugar level by helping correct the impaired breakdown of the glucose by the liver and kidneys, researches have also suggested that compound as tannins, flavonoids, and saponins present in the bark exert an antidiabetic effect by helping modulate enzymes involved in glucose metabolism.
- Arjuna is widely known for its wound-healing properties. one study found that tannins from arjuna bark were able to reduce wound size and improve tensile strength of tissue significantly. It is thought that this herb quickens wound healing by speeding up the turnover of collagen. Collagen is a protein that strengthens our ligaments, bones, and tendons. And also works as scaffolding during the repair of skin wounds. Traditionally, the bark is ground into a paste and applied to the wound to enhance healing.¹²

5. Madan

Botanical name	: <i>Eugenia jambolana</i> .
Sanskrit	: Lavangha
English	: Black plum
Sinhala:	: Madan
Tamil	: Naval
Part used	: Fruit, leaves, dried seed, stem bark



Figure 4.5

Chemical constituents: - Anthocyanins
-Seeds: Jamboline, Ellagic acid (Phenolic acid)

- Pulp: Oleanolic acid, Ursolic acid, β -sitosterol, and Gallic acid

-stem bark: Tannin, Kino like gum

-seeds: Gallic acid, Ellagic acid, Oenothien C, Cornusii B, and Valoneic acid Dilactone

Action: - Stem bark, leaf and seeds: astringent

-Fruit: diuretic, stomachic,

- Dried seed powder: antidiabetic

Treatment for: Diabetes, diarrhoea, dysentery, spongy gum, sore throat

Uses: Possibly Ineffective for Diabetes

Other uses:

- Bronchitis.
- Asthma.
- Severe diarrhoea (dysentery).
- Intestinal gas (flatulence).
- Spasms.
- Stomach problems.
- Increasing sexual desire (aphrodisiac).
- Constipation, in combination with other herbs.
- Exhaustion, in combination with other herbs.
- Depression, in combination with other herbs.
- Nervous disorders, in combination with other herbs.
- Pancreas problems, in combination with other herbs.
- Skin ulcers, when applied to the skin.
- Sore mouth and throat, when applied to the affected area.
- Skin swelling (inflammation) when applied to the skin.

Justification:

- ✓ The possible mechanism by which kernel brings about a decrease in blood glucose may be potentiation of the insulin effect of plasma by increasing either the pancreatic secretion of insulin

- from β -cells of the islets of the Langerhans or its responsiveness.
- ✓ The level of plasma cholesterol is usually increased in diabetes, and such an elevation represents a risk factor for coronary heart disease. The abnormal high concentration of plasma cholesterol in diabetes is mainly due to the increase in the mobilization of free fatty acids from the peripheral depots, since insulin inhibits the hormone-sensitive lipase. Administration of kernel decreases the plasma cholesterol level to normal.
 - ✓ Diabetes mellitus is associated with a marked decrease in the level of liver glycogen. The reduced glycogen store has been attributed to reduced activity of glycogen synthase and increased activity of glycogen phosphorylase. All these activities result in an increased blood glucose level typical for diabetes. It has been shown that kernel restores the level of hepatic glycogen by decreasing the activity of glycogen phosphorylase and increasing the activity of glycogen synthesis.¹

Table 01: Synonyms for the herbs that used in the traditional formulas for diabetes

Sinhala name	English name	Botanical name	Tamil name	Reference
Amukaha	Turmeric	<i>Curcuma longa</i>	Manjal	14,15
Aralu	Chebulic myrobalan	<i>Terminalia chebula</i>	Kadukkai	14,15
Attikka	cluster fig	<i>Ficus recimosa</i>	Aththi	14,15
Akkapana	Air plant	<i>Brophyllum pinnatum</i>	Sathaikaraichan	14,15
Badam	Almond	<i>Prunus amygdalus</i>	Badam	14,15
Eethana	Bermuda grass	<i>Cynodon dactylon</i>	Aruhampul	14,15
Inguru	Ginger	<i>Zingiber officinalae</i>	Inchi	14,15
Iramusu	Indian sarsparilla	<i>Hemidesmus indicus</i>	Nannari	14,15
Heeng arththa	Snap ginger	<i>Alphinia calcarata</i>	Sitraraththai	14,15
Kaha	Turmeric	<i>Curcuma longa</i>	Manjal	14,15
Kaha maduruthala	Holy basi	<i>Ocimum tenuiflorum</i>	Manjal thulasi	14,15
Kohamba	neem	<i>Azadirachta indica</i>	Vembu	14,15
Kos	jackfruit	<i>Artocarpus heterophyllus</i>	Pala	14,15
Kothalahimbutu	-	<i>Salacia reticulata</i>	-	14,15
Kumbuk	arjun tree	<i>Terminalia arjuna</i>	Marutham	14,15
Kuppameniya	Indian Acalypha	<i>Acalypha indica</i>	Kuppaimeni	14,15
Madan	black plum	<i>Eugenia jambolana</i>	Naval	14,15
Pera	Guava	<i>Psidium guajava</i>	Koyya	14,15
Pista	pistachio nut	<i>Pistacia vera</i>	Pista	14,15
Pittavakka	carry-me-seed	<i>Phyllanthus niruri</i>	Keelkai nelli.	14,15
Ranawara	Mature tea tree,	<i>Cassia auriculata</i>	Ponnawarai	14,15
Uluhal	Fenugreek	<i>Trigonella foenum-graecum</i>	Uluwarisi	14,15
Velmi		<i>Glycerrhiza glabra</i>	Athimaduram	14,15
Venivelgeta	tree turmeric	<i>Berberis aristata</i>	Maramanjai	14,15
Wal ambarella	wild (or forest) mango	<i>Spondias pinnata</i>	Kattu ambarangai	14,15
Wal koththamalli	licorice weed	<i>Scoparia dulcis</i>	Kattu koththamalli	14,15

CONCLUSION:

Treatment for Diyawediya in traditional medicine was well evolved and widely employed with desired results. The concepts, theories and techniques practiced several thousands of years ago hold true even in today's practice. This study helps to explore the hidden skills, powers and methods of identification and treatment of diabetes mellitus according to Deshiya chikitsa (Traditional Medicine). And also this study mainly comprises of justification of the ingredients of the special choorna which is used for the treatment of diabetes mellitus by traditional physician. Justification of the ingredients mainly conducted through how the chemical constituents of the herbal drugs help to reduce hyperglycemic activity in the body by referencing the scientific journals.

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