

Recent Trends, Growth and Opportunities of Sangam Literature Apply for Modern Sciences

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Abstract

Sangam literature, a repository of ancient Tamil knowledge, offers valuable insights into the natural world, human relationships, and philosophical inquiry. This study aims to investigate the recent trends, growth, and opportunities of integrating Sangam literature with modern sciences, highlighting its potential applications and contributions to interdisciplinary research. Sangam literature is a mirror of time and an indelible proof of the lifestyle of the Tamils of the Sangam period and their way of life in harmony with nature. Tholkappiyam is a book that came to give grammar to the Tamil language, but it is also a science and philosophy. It is also a book that publishes ideas on medicine, astronomy, astrology, and mathematics. It contains many scientific works that were not published by Western scientific thinkers such as Thales (639-544 BC), Anaximander (611-547 BC), Xenophon (576-480 BC), Empedocles (504-433 BC), and Aristotle (384-322 BC). To investigate the potential applications of Sangam literature in modern scientific research, such as, - Environmental science: understanding ancient Tamil perspectives on nature, conservation, and sustainability. Psychology: exploring ancient Tamil insights into human emotions, behavior, and relationships. Philosophy: examining the metaphysical and epistemological ideas presented in Sangam literature. Medicine: investigating the traditional Tamil medical practices and their connections to modern medical science. This study concludes that the understanding of Tamil classical literature requires multidisciplinary knowledge due to its depth. A scientific approach to Tamil literary analysis can unveil its rich meanings, bringing global recognition and appreciation for this classical language.

Foreword

Sangam literature is a mirror of time and an indelible proof of the lifestyle of the Tamils of the Sangam period and their way of life in harmony with nature. Love was a part of the life of the ancient Tamils. Scientific information has not been studied to the extent that the three things like Maram and Pukala have been studied. If they are studied scientifically, we can understand the deep scientific knowledge of the ancient Tamils.

Scholar P.L. Saami, who has studied plants in Sangam literature, says that many information about plants and trees are explained in Sangam literature, which are mostly similar to those found in plants. (Botanist)

Tholkappiyam is a book that came to give grammar to the Tamil language, but it is also a science and philosophy. It is also a book that publishes ideas on medicine, astronomy, astrology, and mathematics. It contains many scientific works that were not published by Western scientific thinkers such as Thales (639-544 BC), Anaximander (611-547 BC), Xenophon (576-480 BC), Empedocles (504-433 BC), and Aristotle (384-322 BC).

Tolkappiyar has explained the concepts in his grammar book. They can be divided into biological ideas, medical ideas, relativity theory ideas, information communication ideas, and astronomical ideas. Tolkappiyar first explains the biological classification as follows. In the world

ஒன்றறிவதுவேஉற்றறிவதுவே
இரண்டறிவதுவேஅதனொடுநாவே
மூன்றறிவதுவேஅவற்றொடுமூக்கே
நான்கறிவதுவேஅவற்றொடுகண்ணே
ஐந்தறிவதுவேஅவற்றொடுசெவியே
ஆறறிவதுவேஅவற்றொடுமனனே

He explains the evolution of living beings through the book (Archaeology, Heritage, No. 26-27). The ability of Tolkappiyar to scientifically describe the nature of beings to excel through knowledge by acquiring the six types of gates connected to the body of living beings, namely the mouth, nose, eyes, ears, and the mind, is commendable.

“செஞ்ஞாயிற்றுச்செலவும்
அஞ்ஞாயிற்றுப்பரிப்பும்
பரிப்புச்சூழ்ந்தமண்டிலமும்
வளிதிரிதருதிசையும்
வறிதுநிலைஇயகாயமும்என்றிலை
சென்றளந்துஅறிந்தோர்போலஎன்றும்
இனைத்துஎன்போருமுளரே (புறம் 30.1-7)

This song reveals the scientific evidence that there were scholars who measured the path of the Sun and the movement of the Sun. The circle of the sky surrounded by that movement and the sky that stands on its own without a base in the direction of the wind, and that there were scholars who said that the day was of the same size as these.

Solar Family

In line with the opinion of astronomers that people came from a planet in the solar family, the Sangam literature Maduraikanchi also states in the following song.

“சென்றகாலமும்வருஉம்அமயமும்
இன்றுஇவண்தோன்றிய
ஒழுக்கமொடுநன்குஉணர்ந்து
வானமும்நிலனும்தாம்முழுதுணரும்
சான்றகொள்கைச்சாயாயாக்கை
ஆன்றடங்கறிஞர்செறிந்தனர்” (மதுரை 477-481)

The 130th song of the Kurunthogai explains that the ancient sages were skilled in performing scientific feats such as climbing the sky and walking on the sea.

In the song “நிலம் தொட்டுப்புகாஅர்வானம் ஏறார் வீலங்கிரு முந்நீர்காலிற் செல்லார்”, the scientific message comes from the fact that the friend consoles the heroine, saying, “Your hero will not climb the land, he will not climb the sky, he will walk on the sea, do not worry.”

Space Travel

Although space travel was something that the ancients knew, in today’s era, planes without pilots are being used. Science has advanced to the point where it can be launched into space.

“வலவன் ஏவாவானவூர்தி
எய்துபபுறம்பா 27)

Uraiyur Mudukannan Sathanar mentions in the song. The reference to the great kings traveling in the sky in a powerful, self-propelled aircraft that was not driven by a god shows that the Tamils were skilled in the art of flying

Mathematical Thoughts

Mathematics is closely related to life, without its help nothing can happen. Realize this

“எண்ணென்ப ஏனை எழுத்தென்ப இவ்விரண்டும்
கண்ணென்பவாழும் உயிர்க்கு (குறள் 392)

That’s what Valluvar said.

“எண்ணும் எழுத்தும் கண்ணெனத்தகு”
என்று குறிப்பிட்டுள்ளார்

நெய்தலும் குவளையும் ஆம்பலும் சங்கமும்
மைஇல்கமலமும் வெள்ளமும் (பரி 2, 13-14)

Numerology is Mentioned in this Song

The countless numbers represent the period of many crores of years, in which Ambal is the great number of thousand crores calculated by the ancient Tamils, Velam means crores of crores, crores

Large Numbers in Tamil

The existence of names for very large numbers in Tamil highlights the uniqueness of Tamil culture and language.

Medical Insights

The ancient Tamils believed that “A life free of illness is the greatest wealth.” They

understood that good health is essential for a prosperous life. In olden days, the Indian gooseberry (Nellimaram) served as a life-saving remedy. Travelers suffering from severe thirst chewed the fruit to prevent dehydration. Its nutritional value was well known.

கோட்கரந்தீர்தி
நெடஞ்சேண்வந்தநீர்நசைவம்பலர்
செல்லுயிர்நிறுத்தசுவைக்காய்நெல்லி

(புறம் 2715-7)

The gift of this fruit to poet Avvaiyar by King Athiyaman to ensure her long life is mentioned in Puram 97.

Knowledge of Soil

Ancient Tamils had deep knowledge of soil types. The sand from the Vaigai River was reddish-brown or black, making it suitable for agriculture.

வரும்புனல்வையைவார்மணல்அகன்றுறைத்
திருமருதோங்கியவிரிமலர்க்காலின்

(அகம் 36.9-10)

Describing the river's fertile sand. The changing seasons and the impact of climate change, including desertification, are poetically expressed in Purananuru.

கதிர்கையாகவாங்கிஞாயிறு
பைதரப்பெறுதலின்பயங்கரந்துமாறி
வீடிவாயப்பட்டவியன்கண்மாளிலம்

(அகம் 164.1-3)

It illustrates how the sun's heat dried up the soil, causing cracks, withered leaves, and barren lands.

Water Clock (Nirkadikaram)

Before undertaking important tasks, ancient Tamils consulted the water clock to determine the right time. Kings prepared for wars by checking the water clock in temples, as indicated in Tamil literature.

எறிநீர்வையகம்வெலீஇயசெல்போய்நின்
குறுநீர்க்கன்னல்இனைத்துஎன்றுஇசைப்ப
(முல்லைப்பாட்டு57-58)

Poet Mangudi Maruthanar mentions women using a water-clock-like vessel for timekeeping. கதிர்மருங்கறியாதஞ்சுவரப்பாஅய் (அகம் 43,6,7)

A heroine awaiting her beloved compares herself to someone constantly watching the water clock, hoping for her lover's arrival (Kurunthogai 261).

அஞ்சுவருபொழுதினானுமென்கண்
துஞ்சாவாழிதோழிகாவலர்
கணக்குஆய்வகையின்வருந்தினை
நெஞ்சுபுண்ணுற்றவீழும்ந்தானே (குறு 261)

Newton's Law

வேழம்வீழ்த்தவீழுத்தொடைப்பகழி
ஆழல்புற்றத்துஉடும்பில்செற்றும்
வல்வில்வேட்டம்வலம்படுத்துஇருந்தோன்
(புறம் 152)

The concept of force and motion, similar to Newton's Law, is reflected in Tamil literature. The arrow that struck various animals such as elephants, tigers, and deer before slowing down illustrates the principle of motion.

A floating raft in a river moves only due to water current, unaffected by external forces—echoing Newton's second law of motion. Purananuru also metaphorically emphasizes life's steadiness, much like a raft moving smoothly along the river.

பேர்யாற்று
நீர்வழிப்படுஉம்புணைபோல்ஆருயிர்
முறைவழிப்படுஉமென்பதும் (புறம் 192 8-10)

Knowledge of Stars

Ancient Tamils had profound astronomical knowledge. They referred to the appearance of stars as “Venni Mulaitthal” (sprouting silver) in Tamil literary works. The stars were described as blooming flowers because of their brilliance.

வெள்ளிமுளைத்தநள்ளிருள்வீடிய (பொரு -72)

The stars' appearance was not random but caused by the sun's brightness obscuring them during the day.

மீன்பூத்தன்னஉருவ - (புறம் 21:4)
“வான்மீன்பலபூப்ப” (புறம் 129.7)

The flashing of stars was likened to flickering oil lamps, emphasizing their changing brilliance.

வானமின்னின்வயின்வயின்இமைக்கும்
(குறு 150; 2)

The term “Meen” (fish) symbolically referred to stars, highlighting their shimmering light.

மீன்பூத்தன்னதோன்றலர் (திரு 169)

“சிறுமீன்புறையும்கற்பின்” (பொரு 303)

“கைம்மீன்புகையிலும்” (புற 1171)

“வடமீன்புறையும்கற்பின்” (புற 122 ;8)

“மீன்றிகழ்விசும்பின்” (புற 25:1)

The stars’ silvery appearance also earned them the name “Velli” (silver).

Tamil literature reveals awareness of celestial objects like the sun, moon, and planets.

வெள்ளிஏந்தர (புறம் 398;1)

வெள்ளிலுடினும் (புறம் 117:2)

“இலங்குகதிர்வெள்ளி” (புறம் 35,7)

Mangudi Maruthanar poetically described planets and star clusters as shining jewels beyond the sky.

அங்கண்மால்விசும்புகையவளிபோழ்ந்து

(மதுரை 384)

Purananuru mentions that there is no air beyond 200 miles above the earth’s surface, reflecting a basic understanding of the Earth’s atmosphere.

Scientific knowledge of measuring tools like the plumb line (Nempukol) and weighing scales (Tarasu) is reflected in Puram 131. A king’s generosity was metaphorically compared to balancing the earth using a plumb line.

“வழியிடவழங்காவானஞ்சூடிய”

The verses of Sangam poets reflect not only their poetic knowledge but also their scientific thinking, explaining things as they are. Their understanding extends to creatures that crawl, fly, and live in water, as well as plants and animals. They even grasped the Earth’s rotation, believing that the Earth’s spin creates harmonious music.

“மலையும்கே

மலையும்காபுகழ்க்கானமும் தொலையாநல்லிசை

உலகமொடுநிற்ப” என்கிறது மலைபடுகடாம்

(170-171)

The sky is described as immeasurable and as a vast, airless expanse where even air cannot penetrate.

“மயங்கிருங்கருவிய விசும்புமுகனாக இயங்கிய இருசுடர்கண்ணெனப் பெயரிய” என்ற புறப்பாடல் வீளக்குகின்றது (365)

Their knowledge of the plumb line and balance is explained in Purananuru verse 131. The generous king Ay Mudamosiyar is likened to Mount Meru in the north. Since his great kingdom lies in the south, the Earth appears tilted, symbolically explained using the image of a balancing scale.

Conclusion

Understanding Tamil classical literature requires multidisciplinary knowledge due to its depth. A scientific approach to Tamil literary analysis can unveil its rich meanings, bringing global recognition and appreciation for this classical language. This study highlights the significance of Sangam literature as a reflection of the ancient Tamils’ way of life, showcasing their harmony with nature and deep understanding of various scientific concepts. By adopting a multidisciplinary approach to analyze Tamil classical literature, researchers can uncover its rich scientific and philosophical insights, which often predated Western scientific thought. A scientific analysis of these texts can reveal the profound knowledge embedded within, potentially leading to global recognition and appreciation of Tamil literature’s contribution to human understanding. Ultimately, this study underscores the importance of exploring classical Tamil literature through a modern lens to unlock its full potential and significance.

References

1. Avvai Duraisamy Pillai, Sanga Ilakkiyangal, Gowra Pathippakam, Chennai.
2. Dr. Jayakrishnan, Thamizhiyal Pudhu Noakku, Kurunji Pathippakam, Chennai
3. Dr. K. Murugesan, Tamil Puthukavithaikalil Ariviyal, Manivasakar Pathippakam, Chennai.
4. Aganaanooru Ayyukovai, Kurunji Pathippakam, Chennai.
5. Natrinai, Ayyukovai, Vizhisudar Pathippakam, Chennai.