

Allusions of *Rasāyanaśāstra** in Telugu Literature

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Abstract

The allusions of *rasāyanaśāstra* from Telugu literature are discussed from the beginning of Telugu literature to Modern period. The references to *rasaśāstra* or *rasāyanaśāstra* in various Telugu literary works are narrated to indicate the period of *rasaśāstra* works.

Keywords: *Rasaśāstra*, *Rasāyanaśāstra*, Telugu literature

1. INTRODUCTION

The history of Andhras and the Telugu language is said to be from the beginning of Christian era CE. The word 'Andhra' was mentioned in Aitareya Brāhmaṇa and also in Vedic period. The prominence of Andhras in history came from the period of Eastern Chalukyas and later during Kakateya rulers and achieved greater heights both politically and literally during Vijayanagar empire especially under Srikrishnadevaraya rule.

Many Telugus were great scholars of Sanskrit and wrote commentaries on Sanskrit literary works. Among them Mallinātha Surin, who wrote commentaries for works of Kālidāsa and others takes the first place. Jagannatha Panditarāya, court poet of Kashmir and other Mughal emperors was a great Sanskrit scholar who contributed *Rasagaṅgādhara* in Sanskrit literature.

2. THE EARLY TELUGU LITERARY PERIOD: 10TH – 14TH CENTURY

2.1 Ayurveda, the eightfold Indian system of medicine was mentioned in the first literature of Telugus, Mahābhārata, Ādiparva and Sabhāparva written by Nannayya (1970, p.6).

- a. "అనికము సేవించురె ని
న్ననఘా యష్టాంగమైన యాయుర్వే దం
బున దక్షులైన వైద్యులు,
ఘనముగ ననురక్తులై జగద్ధిత బుద్ధిన్ "

"*anīsamu sēviṅture ni nnanaghā yaṣṭāṅgamaina
yāyurvēdaṃ buna dakṣ ulaina vaidyulu,
ghanamuga nanuraktulai jagaddhita buddhin*"¹

O sinless king, Are the expert physicians in your court, serving you with eightfold Ayurveda system of medicine with devotion and universal welfare.

* The word *rasāyana* was used in our ancient books for rejuvenation or elixir, the drug for longevity. For the last hundred and fifty years, *rasāyana śāstra* is being used to denote Chemistry, and is also used here.

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1 The Telugu transliteration is carried out based on Wiktionary: Telugu transliteration. This Wiktionary transliteration standard is based on ISO 15919, the international linguistic standard for Indic scripts. The key for letters, which are not there in Sanskrit, but present in Telugu is as follows: ఎ - e, ఏ - ē, ఒ - o, ఓ - ō, అ - r, ఆ - l, ం - ṅ, ఁ - ṁ, even though ṁ was used ఁ (ardhānusvar), it was adopted for ం (purnānusvar) as in Sanskrit.

b. "సారమతి జేసి మానస

శారీర రుజావలులకు సతతంబు బ్రతీ

కారములు సేయుచుందురె,

యారగ వృద్ధిప సేవ నొషధసేవన్ "

“*sāramati jēsi mānasa śārīra rujāvalulaku satataṃbu bratī kāramulu sēyucum dure, yāraga vrddhopasēva nauṣadhasēvan*”

With true mind, are they serving and treating the mental and physical diseases and helping the old with proper treatment using medicines and nursing.

2.2 Nannecoda (Rao, 1994. p. 685), a 11th century poet described *rasa śāstra*, the alchemy, in a poem wherein he says that iron when it is kept for long in mercury, then only it will get the colour of gold; like that, if one keeps his mind on God constantly, then only, he will attain realization.

"ఇనుము రసంబులో నుడుగ కెప్పుడు నూనిన గాని గాదె కాం
చనమమరాద్రి వాయసము సంతతమున్ వసియించి కానియే
కనకము వాయ గాదు చిరకాల సుసేవన గాని కాదె స
న్మనమున నిస్ దలంచు డొక మాత్రయె చాలదె ముక్తికీశ్వరా”.

“*inumu rasambulo nuḍuga keppuḍu nūnina gāni gāde kāṃ*

canamamarādri vāyasamu saṃtatamun vasiyiṃci kāni yē

kanakamu cāya gādu cirakāla susēvana gāni kāde sa

nmanamuna nin dalamcu ḍoka mātraye cālade muktikīśvarā”.

Iron when it is heated with mercury only gets converted to gold, a crow after living for a long time in Amaradri or God’s abode only , it will get the bright colour, but with deep devotion even for a moment, one can attain realization/*mokṣa/mukti*.

2.3 Palkuriki Somanatha (Palkuriki, 1990, p. 206), a 12-13th century Shaivite poet in his

Panditārādhyā Caritra, mentions that Śrīśailam had tanks of *rasa* and *rasāyana* juices.

“*రస రసాయన సుధా రస సరోవరము లనగ నిగ్గిరి యంద యెట్లు వసించె*”

Rasa rasāyana sudhā rasa sarovaramu lesaga niggiri yaṇḍa yetlu vasince

How in this hill the tanks of *rasa* and *rasāyana* juices stayed.

2.4 Śrinātha, the court poet of many kings and author of number of *kāvya*s, in his *Kāsī Khandam*, while describing Śrīśailam, mentions that Śrīśailam had *siddhi kṣhetras* like *rasasiddhi*, *rasāyanasiddhi*, *mūlikasiddhi* and *pādukāsiddhi* (Srinath, 2012.Ch.3, prose 52.p. 353).

రస సిద్ధి, రసాయన సిద్ధి, మూలికా సిద్ధి, పాదుకా సిద్ధి,దులగు సిద్ధి
క్షేతంబుల చేతను శోభితంబి..... శ్రీ శైలంబు జేరవచ్చె.

rasasiddhi, rasāyanasiddhi, mūlikāsiddhi and pādukāsiddhyādulagu siddhi kṣetraṃbula cetanu śobhitambai śrī śailaṃbu je (ce) ravacce.

They reached Śrīśailam, which had pilgrim centers which can bestow perfection in *rasa*, *rasāyana*, *mūlika* and *pādukās*.

2.5 Koravi Goparaju, a 13th – 14th century poet distinguishes *rasaśāstra* with *rasāyanaśāstra*, the former converts all lower metals to gold while the latter is to control diseases and for longevity (Goparaju, 1982, pp. 337-339).

a. " ఇది సువర్ణదాయి యిది జరామృత్యు ని

ర్షరణమనుచు రస రసాయనములు పేర్చి

నిచ్చి యనిపె బిలమార్గ మెరిగింప

నవ్వరాహమైన యసుర బనిచె“.

“*idi suvarṇadāyi yidi jarāmṛtyu ni*

rharāṇamanucu rasa rasāyanamulu pērmī nicci yanipe bilamārga merigimpa navvarāhamaina yasura banice”.

This is *Rasa*, the converter of lower metals to gold, the other one is *rasāyana*, the destroyer of old age and death. He gave both to the boar form demon and sent him through the tunnel.

b.

"రెండు ఘటికలు రెండు చేతుల నిడుకొని రసమిది సర్వ లోహ కాంచనీకరణంబు, రసాయనంబిద్ది జరామ్మత్సు హరణంబు వీనిలో నొకటి మీరిద్దరు బుచ్చుకొనుడనిన దండ్రి జరా జీర్ణుడగుటంజేసి రసాయనంబిమ్మనిన యితని మాట పొసగదెల్ల లోహంబుల నూనినంత పసిడి గానొనర్చు రసమె యిమ్ము నాకు రాజు నయ్యెద ".

"*reṃḍu ghaṭikalū reṃḍu cētula niḍukoni rasamidi sarva loha kāṃ canīkaraṇaṃ bu, rasāyanambiddi jarāmr̥tyu haraṇaṃbu vīnilo nokaṭi mīriddaru buccukonuḍanina daṃ(taṃ)² dri jarā jīrṇuḍaguṇaṃjesi rasāyanambimmanina yitani māṭa posagadella lohambula nūninaṃta paṣiḍi gānonarcu rasame yimmu nāku rāju nayyeda* ".

Keeping two caskets/metal boxes in his hand, the boarform demon said to the father and the son, "One of this *rasa* which converts all metals to gold, and the other one *rasāyana* dispels the old age and death. You can take only one from these. Father being old, wanted to get rid of his old age and asked for *rasāyana*. Son wanted to becomeking by acquiring lot of gold by *rasa*.

Since Andhradesa is in the midst of North and South India, the *deśīya* methods of Ayurveda

and the *rasasāstra* methods of Siddha, a method of medicine intermingled in Andhradesa and resulted in *rasasāstra* type of medicine where in metals took a major lead in medicines, especially mercury, gold, sulphur etc., in Ayurveda.

2.6 Nāgārjuna, though from outside of Andhradesa, made his abode in Sriparvata, ie., present Srisailam and Nagarjuna Konda area, which is mountainous Nallamala forest area and became well known for the *rasasāstra*. Archeological (Sastry, 2010) and literary evidences indicate that he had set up his school of alchemy in this area and one big cave was converted as his laboratory and number of his disciples worked there. This is described by a Telugu poet of 14th century named Gaurana in

ఆ సిద్ధ నాగార్జునాఖ్యుండు గణక భాసిల్లు రసవాదపాటవం బమర బసిడి గావించు నప్పరమ
విఖ్యాతి నెసగె జగమెల్ల నిదియరుదనగ బనస చంపక పారిభద్ర రసాల సాల తిందుక
గంధసాల హింతాల తాల ఖర్జూర కేతక పిచుమంద మందార సంవీర మధుర మాకంద
కందారాళగరు కతక పున్నాగ నాగ కేసరలుంగ నారంగ పూగ పూగ శోభితంబులై
తరిగరంబొప్పు నాతత గుహంతరము జొచ్చి వారలు మున్ను శోధించి చూచి వచ్చిన
ప్రియమార వసియించి యందు రసము లారును నుపరసము లొన్నిదియు పసరులు,
మందులు, పాషాణములును, గలువంబులును జాలగా సమకూర్చి.....
గురునాథు తలచి తద్గురువు భజించి వార భైషజాది దైవములకు మ్రొక్కి నేర్పిన
మందులన్నియు వైచి యగ్ని గూర్చి పుటంబు గ్రక్కున బెట్ట నపుడు వెసనూదువారును
విసువక రసము పసరులు గలిపి పాల్పడ నూరు వారలను వొందగా మూసల సవరించువారు

2. Indicates that there is a conjunction of words known in Telugu grammar as *saralādesa sandhi*, the one in the bracket is the original letter, without conjunction. Wherever it occurred it is shown like that.

మొనసీ క్రమ్మట పుటంబులు పెట్టువారు కలయంగ నూదిన కనకంబు దివిసీ యెలమమై
 టెనుబ్రోపు లీడ్పెడువారులై సంభ్రమించు నయ్యయి పనుల నాసన్నులై శిష్యులందరు మెలగ
 టొలివో తాజేయబూనిన కార్యమలవడ ఫలసిద్ధి నందిన హృదయ నలినంబు వికసింప
 నాగార్జునుండు.

his book *Navanātha Caritra* (Gourana, 1984, pp. 293-296) written in poetic form of dvipada, or couplet.

*nā siddha nāgārjunākhyuṇḍu gaṇaka bhāsillu
 rasavādapāṭavaṃ bamara ba(pa)siḍi gāvimcu
 napparama vikhyāti nesage jagamella
 nidiyarudanaga ba(pa)nasa caṃpaka pāribhadra
 rasāla sāla tiṇḍuka gaṇḍhasāla hiṃtāla tāla
 kharjūra ketaka picumaṇḍa maṇḍāra saṃvīra
 madhura mākaṃḍa kaṃḍārālagaru kataka
 punnāga nāga kesaralumga nāraṃga pūga pūga
 śobhitambulai*

*tarigaraṃboppu nātata guhāṃtaramu jocci vāralu
 munnu śodhiṃci cūci vaccina priyamāra vasiyimci
 yaṃḍu rasamu lārunu, nuparasamulenmidiyu
 pasarulu, maṇḍulu, pāṣāṃamulunu, ga (ka)
 luvambulunu jālagā samakūrci....*

*gurunāthu talaci tadguruvu bhajiṃci vāra
 bhaiṣ ajādi daivamulaku mrokki nērcina
 maṇḍulanniya vaici yagni g(k)ūrci puṭaṃbu
 grakkuna be(pe)tta napuḍu vesa nūduvārunu
 visuvaka rasamu pasarulu g(k)alipi pālpaḍa
 nūru vāralanu vomdaḡā mūsala savariṃcuvāru
 monasi krammata puṭaṃbulu peṭṭuvāru kalayaṃga
 nūdina kanakaṃbu divisi yelamamai b(p)
 enubrovulīḍceḍuvārulai saṃbhramiṃcu nayyayi
 panula nāsannulai śiṣyulaṃḍaru melaga bolivo
 tājeyabūnina kāryamalavaḍa phalasiddhi naṃdina
 hṛdaya nalināmbu vikasimpa nāgārjunuḃḍu.*

That Siddha Nāgārjuna, with power of alchemy, converting into gold using a rare process, became famous. He used number of plants/trees like jackfruit, *caṃpaka*, *pāribhadra*, *rasāla* (mango), *sāla*, *tiṇḍuka*, *gaṇḍhasāla*, *hiṃtāla*, *tāla*, *kharjūra* (dates), *ketaka*, *picumaṇḍa*, *mandara*, *saṃvīra*, *madhura*, *mākaṇḍa*, *kandarāla*, *agaru*, *kataka*, *punnāga*, *nāgakesara*, *lunga*, *nāraṃga*, *pūga* etc.. They entered into the cave, which was examined before by his disciples. They have kept there already six *rasas*, eight *uparasas*, juices of plants, medicines, *paṣāṇas* / hard stones / rock stones which contain arsenic etc., and the grinding stones

(mortar and pestle).

They prostrated before the teacher and then the Gods representing medicines. Then they put all these medicines and then arranged different types of fires (*puṭās*), blowers blowing, some were grinding in the grinding stones the mercury and the juices of plants, some were correcting/shaking the crucibles (*mūṣas*) again putting the heaters or *puṭās* and the obtained gold heaps were removed by some, like that all his disciples are carrying out their duties properly and siddha Nāgārjuna successfully transformed into gold and was very happy.

Nāgārjuna's main idea was to convert lower elements to gold, what all alchemists of that period were interested. He had written a great Sanskrit book on *rasasāstra*, entitled *Rasa Ratnākara/ Rasendra Maṅgala* (Sarma, 1999). A large number of metals and their processing methodologies have been described in this book, which became a base for later Ayurveda approach of medical science. His student Nityanatha, another siddha from the same area wrote *Rasaratnākara* (Nityanatha,) in Sanskrit, discussing the treatment methodologies for metals and other materials. Another siddha named Manthana Bhairava also wrote a book in Sanskrit entitled *Ananda Kanda* (Mishra, 2008). It gives the combinations of metals and herbal products for medicinal purpose. The treatment of sulfur in *Ananda Kanda* has better processing technique.

3. TELUGU LITERATURE: 15TH – 17TH CENTURY

3.1 Peddana, the court poet of Śri Kṛṣṇadevarāya clearly mentions in his *prabandha* (poem), *Manucaritra* (Peddana, 1947, p.99), that mercury can be converted to an *ouṣadham* or drug and can be taken with milk.

"ఆరూఢస్థితి జంద్రికాధవలితాజాండంబులో జన్మదొ
ప్పారెన్ గాలభిషగ్వరుండు విరతంబై కాముకశ్రీణికిన్
మారోత్సాహము నిల్వ పాదరసమున్ బంధించి గ్రాసార్థమై
క్షీరస్థాలిక బెట్టినట్టి గుటికాసిద్ధోషధంబో యనన్ " .

“*ārūḍhasthiti jamdrikādhavalitājāṃdambulō
jandruḍo ppāren gālabhiṣagvaruṃḍu virataṃbai
kāmuśrīṇikin mārotsāhamu nilva pādarasamun
bamdhimci grāsārthamai kṣīrasthālika beṭṭinaṭṭi
guṭikāsiddhauṣadhaṃbo yanan*”.

In the sky, full of moon's white rays, moon was shining like the medicinal pill prepared by physician of Time (*Kala bhiṣagvaruṃḍu*) by binding mercury in milk to take inside.

3.2 Śrī Kṛṣṇadevarāya in his *Āmuktamālyada* also mentions about the *rasavidya* (Sri Kṛṣṇadevarāya, 1907, Chap, 2, p. 5).

" తరుణ శైవాల జలజ పత్రములు వొదువ
మరకత చ్చాయ బొల్పు తత్పరిఖ జలము
కోట బంగారు సేయుట కొరకుమున్ను
బ్రహ్మ పిడిచిన మందాకు పసరనంగ " .

“*taruṇaśaivāla jalaja patramulu voduva
marakata cchāya bolcu tatparikha jalamu
koṭa baṃgāru sēyuṭa korakumunnu
brahma piḍicina maṃdāku pasaranaṃga*”.

Tender leaves (*patra*) of the lotus along with tender water weeds (*saivāla*) showed golden colour of the water in the moat surrounding the fort, like the medicinal juice pressed by Brahma, the creator to convert the fort to golden fort.

These references in Telugu literature clearly show that the *Rasaśāstra* of Nāgārjuna, was very

much familiar in Andhra Pradesh. The available allusions/ revelations from Telugu literature have been mentioned as far as possible.

In 16th century, Basavaraju wrote a book entitled *Basavarājīyam* (Basavaraju, 1919), which describes a large number of metallic and herbal combinations for various diseases and *nāḍi sāsra* also. This *Samhitā* has become an important book of Ayurveda along with *Bṛhatrayā* ie., Caraka, Suśruta and Vāgbhaṭa's books *Aṣṭāṅga Hrdaya* and *Aṣṭāṅga Saṃgraha* and *Laghutrayā* ie., Mādhavakara, Sāraṅgadhara and Bhāvamiśra's works, *Mādhavanidāna*, *Śāraṅgadhara Saṃhita* and *Bhāvaprakāśa* respectively.

3.3 In *Haṃsavimsati*, a 17th – 18th century book, an encyclopedic work written by Ayyalaraju Narayanakavi is described an Ayurvedic physician, his form and the medicines he used to administer (Narayanakavi, 1977, p.52).

- a. మెలివడు తీగమట్ల జిగిమించిన పాగ జనుంగు పచ్చడం
బలవడు చల్వదోవతి యుయారపు గందపు బూత దొల్లువో
గులు మణి ముద్రికల్ వలపు గుల్కెడు వీడ్యము చంక వల్ల మం
ఘ్రుల తుద ముచ్చెలున్ వెలయ గుప్తగుణుండను వైద్యుడొప్పుగన్”

*melivaḍu tīgacuṭla jigimincina pāga jinunṅu
paccadaṃ balavaḍu calvadovati yoyārapu
gaṃdapu būta ḍollupo gulu maṇi mudrikal
valapu gulkeḍu vīḍyamu caṃka vaṭra maṃ
ghrula tuda muccelun velaya guptaguṇuṃḍanu
vaidyudoppugan*”

Shining cap with rolls, fine embroidered upper cloth, good *dhoti*, on the forehead a sandalwood smear, ears with golden rings, golden rings with precious stones for all fingers, beetle nut leaves with flavoring (*sugandha*) materials like coriander, *lavāṅga* etc. in the mouth, a box with medicines under his arm, came a physician named Guptaguna.

b.

మరియు నశ్వగంధాది ఘృతంబును, నైలేయక ఘృతంబును, షట్పల ఘృతంబును, దూర్వాది ఘృతంబును, పంచగవ్య ఘృతంబును, నార్దక ఘృతంబును, దండులీయక ఘృతంబును, గూష్మాండ ఘృతంబును, మొదలైన ఘృతంబులు సేయు నేర్పును , పంచాగ్ని చూర్ణంబును, జిత్రకాది చూర్ణంబును, బడబానల చూర్ణంబును, మాణిమంథ చూర్ణంబును, మరీచ్యాది చూర్ణంబును, దాళిస చూర్ణంబును, నేలాది చూర్ణంబును, దుమ్మురు చూర్ణంబును, గర్పూరాది చూర్ణంబును, పంచబాణ చూర్ణంబును, భృగ్వాది చూర్ణంబును నాదియైన చూర్ణంబులొనరించు పటిమయు, చించిల్యాది లేహ్యంబును, క్షుద్రాభయాది లేహ్యంబును, జతుషష్టి మరీచ్యాది లేహ్యంబును, గుసుమార్థాది లేహ్యంబును, పిప్పల్యాది లేహ్యంబును, బిల్వాది లేహ్యంబును గుండల్యాది లేహ్యంబును, మొదలుగా గల లేహ్యంబులొనరించు నైపుణ్యంబును, నారికేళాది రసాయనంబును, గుడనాగరాది రసాయనమును, శిగ్రుపుప్ప రసాయనమును, జాతఫల రసాయనమును, సుకుమార రసాయనమును, భల్లాతకీ రసాయనమును, సుదర్శన రసాయనమును, వారాహీ రసాయనమును, విలంగాది రసాయనమును , అమృత రసాయనము ఆదిగా గల రసాయనంబులు సేయు పొందికలెరుంగు విధంబును , శర పుంఖాది తైలంబును, లక్ష్మీనారాయణ తైలంబును, లాకాది తైలంబును, ధన్వంతరి తైలంబును, బంచార్క తైలంబును, పాశ్చాత్యనిమ్మతైలంబును, విషముష్టి తైలంబును, కేతకీ తైలంబును, స్నేహార్క తైలంబును, వాతాంతక తైలంబును, బూతికా తైలంబును, భూనాగ తైలంబును, భృంగామలక తైలంబును, మొదలగు తైలంబుల పరిజ్ఞానంబును, నారికేళాంజనంబును, సోవీరాంజనంబును, వీరభద్రాంజనంబును, నీలాంజనంబును, గరుడాంజనంబును, గవోతాంజనంబును, గర్పూరాంజనంబును, మొదలుగాగల అంజన భేదంబుల గూర్చు చమత్కారంబును, నగ్నికుమారకము, రాజమృగాంకము, పూర్ణ చంద్రోదయము, వసంత కుసుమాకరము, వాత రాక్షసము, చంద్రహాసము, చంద్ర ప్రభావతి రసము, కందర్పాంకుర రసము, షణ్ముఖ రసము , తాలకేశ్వర రసము, ప్రతాప లంకేశ్వర రసము, చాతుర్థిక రామబాణము, విష్ణుచక్రరసము, విశ్వంభర రసము, బడబానల రసము, నారాయణ రసము, మదనభైరవ రసము, భార్గవ రసము, జ్వరాంకుశము, స్వచ్ఛంద భైరవము, సంజీవన రసము, రసభూపతి, చింతామణి మొదలైన దివ్య రసా షధములను, గంధక, రసనాభుల లక్షణంబులనెరింగి విరుచు ప్రావీణ్యంబును, లోహభస్మ, తామ్రభస్మ, వంగభస్మ, సీసభస్మ, నాగభస్మ, శంఖ భస్మ, సువర్ణ భస్మంబులు సేయు మర్యాదయు, శీతభంజి అరళ్యాది మాణిభద్రతాళీస మాత్రలు గట్టు నవధానంబును, కార ద్రావక గుగ్గుళు పిష్ట కషాయంబులు మూలికలు కైకర్ణికలు సేయు నౌచిత్యంబును , సూత్ర స్థాన, శారీర నిదాన శాస్త్రంబుల పరిచితియును, డెబ్బది రెండు నాడీ భేదంబులును, వాత పితృ క్షేమ్మంబుల నుల్పణంబులైన త్రిశత షష్టి రోగంబులకు దత్తతీ చికిత్సలు చేయు చాతుర్యంబును గలిగి రెండవ ధన్వంతరి యనంబరగు.

mariyu naśvagaṃdhādi ghṛtaṃbunu, naileyaka ghṛtaṃbunu, ṣaiṣpala ghṛtaṃbunu, dūrvādi ghṛtaṃbunu, pañcagavya ghṛtaṃbunu, nādraka ghṛtaṃbunu, daṃḍulīyaka ghṛtaṃbunu, gūṣmāṃḍa ghṛtaṃbunu, modalaina ghṛtaṃbunu seyu nerpunu , pañcāgni cūrṇaṃbunu, jitrakādi cūrṇaṃbunu, baḍabānala cūrṇaṃbunu, māṇimamtha cūrṇaṃbunu, marīcyādi cūrṇaṃbunu, dālisa cūrṇaṃbunu, nelādi cūrṇaṃbunu, dumburu cūrṇaṃbunu, garpūrādi cūrṇaṃbunu, pañcabāṇa cūrṇaṃbunu, bhṛgvādi cūrṇaṃbunu nādiyaina cūrṇaṃbul nariṃcu paṭimayu, cimcilyādi lehyaṃbunu, kṣudrābhayādi lehyaṃbunu, jatuṣaṣṭi marīcyādi lehyaṃbunu, gusumārthādi lehyaṃbunu, pippalyādi lehyaṃbunu, bilvādi lehyaṃbunu guṇḍalyādi lehyaṃbunu, modalugā gala lehyaṃbulo nariṃcu naipūnyambunu, nārikelādi rasāyanamunu, guḍanāgarādi rasāyanamunu, śigrupuṣpa rasāyanamunu, jūtaphala rasāyanamunu, sukumāra rasāyanamunu, bhallātakī rasāyanamunu, sudarsana rasāyanamunu, vārāhī rasāyanamunu, vilāṅgādi rasāyanamunu , amṛta rasāyanamu ādigā gala rasāyanambulu seyu poṃdikaleruṃgu vidhaṃbunu , śara puṃkhādi tailaṃbunu, lakṣmīnārāyaṇa tailaṃbunu, lākādi tailaṃbunu, dhanvaṃtari tailaṃbunu, bañcārka tailaṃbunu, pāścāyanimbatailaṃbunu, viṣamuṣṭi tailaṃbunu, ketakī tailaṃbunu, snehārka tailaṃbunu, vātāmtaka tailaṃbunu, bütikā tailaṃbunu, bhūnāga tailaṃbunu, bhṛṅgāmalaka tailaṃbunu, modalagu tailaṃbula pariñānaṃbunu, nārikelāṃjanaṃbunu, sauvīrāṃjanaṃbunu, vīrabhadraṃjanaṃbunu, nīlāṃjanaṃbunu, garuḍāṃjanaṃbunu, gapotāṃjanaṃbunu, garpūrāṃjanaṃbunu, modalugāgala aṃjana bhedaṃbula gūrcu camatkāraṃbunu, nagnikumārakamu, rājamṛgāṃkamu, pūrṇa caṃdrodayamu, vasaṃtakusumākaramu, vāta rākṣasamu, caṃdrahāsamu, caṃdra prabhāvati rasamu, kaṃdarpānkura rasamu, ṣaṇmukha rasamu , tālakeśvara rasamu, pratāpa laṃkeśvara rasamu, cāturthika rāmaḍānaṃbunu, viṣṇucakra rasamu, viśvaṃbhara rasamu, baḍabānala rasamu, nārāyaṇa rasamu, madanabhairava rasamu, bhārgava rasamu, jvarāṃkuṣamu, svaccaṃda bhairavamu, saṃjīvana rasamu, rasabhūpati, ciṃtāmaṇi modalaina divya rasau ṣadhamulanu, gaṃdhaka, rasanābhula lakṣaṇaṃbulaneriṃgi virucu prāvīṇyaṃbunu, lohabhasma, tāmrabhasma, vaṃgabhasma, śisabhasma, nāgabhasma, śaṃkha

bhasma, suvarṇa bhasmaṃbulu seyu maryādayu, śītabhaṃji aralyādi māṇibhadratālisa mātralu gaṭṭu navadhānaṃbunu, kṣāra drāvaka guggulu piṣṭa kaṣāyaṃbulu mūlikalu kaikarṇikalu seyu naucityaṃbunu, sūtra sthāna, śārīra nidāna śāstraṃbula paricitiyunu, ḍebbadi reṃḍu nādī bhedaṃbulunu, vāta pitta śleṣmaṃbula nulbaṃbulaina triśata ṣaṣṭi rogaṃbulaku dattat cikitsalu ceyu cāturyaṃbunu galigi reṃḍava dhanvaṃtari yanambaraḡu.

Here he described number of Ayurvedic medicines like medicated fats (ghṛtas), powders, pastes, rasāyanas, oils, different kinds of collyria , metallic medicines, powders of different metals, tablets and decoctions.

The list is as follows:

Fats: *asvagandha, aileyaka, ṣatpala, dūrvādi, pañcagavya, ādraka, tandulīyaka, kūṣmāṃda*

Powders: *pañcāgni, citrakādi, badabānala, mānimamtha, marīcyādi, tālisa, ēlādi, tumburu, karpūrādi, pañcabāṇa, bhṛgvādi,*

Electuaries: *cincilyādi, kṣudrābhayādi, catuṣaṣṭi, maricyadi, kusumārthadi, pippilyādi, bilvādi, kundalyādi. etc.,.*

Rasāyanas: *nārikelādi, guḍanāgarādi, śigrupuṣpa, cūtaphala, sukumāra, bhallātaki, sudarsana, vārāhī, vilāṅgādi, amṛta.etc.,.*

Oils: *śarapuṃkhādi, lakṣmīnārāyaṇa, lākṣādi, dhanvantari, pañcārka, pāścāyanimba, viṣamuṣṭi, ketaki, snehārka, vātāmtaka, pūtika, bhūnāga, bhṛṅgāmalaka, etc.,.*

Collyrium or eye-salve: *nārikelā, sauvīra, vīrabhadra, nīla, garuḍa, kapota, karpūra, etc.,.*

Metallic Medicines: *agnikumāraka, rājamṛgāṅka, pūrṇa acandrodaya, vasaṃtakusumākara, vātarākṣasa, candrahāsa, candraprabhāvati, kandārpaṇkura, ṣaṇmukha, tālakeśvara, pratāpa lankeśvara, cāturthika rāmaḍāna, viṣṇucakra, viśvaṃbhara, badabānala, nārāyaṇa, madana bhairava, bhārgava, jvarāṃkusa, svacchandabhairava, saṃjīvani, rasabhūpati, ciṃtāmaṇi, etc.,.*

Metallic Powders: *lohabhasma, tāmrabhasma, vaṃgabhasma, śisabhasma, nāgabhasma, śaṅkhabhasma, suvarṇabhasma.*

Tablets: *śītabhaṃji, aralyadi, māṇibhadra, tālisa etc.*

Decoctions: *kṣāra, drāvaka, guggulu, piṣṭa, etc.*

The physician is an expert in making all the above medicines for treatment, He is an expert of eight fold ayurveda, seventy two types of pulse (*nāḍi*) understanding, 360 types of diseases and their treatment. He is like another Dhanvantari.

3.4 I would like to mention that many more medicinal substances with metals and herbs were described for various diseases in some of the books written by earlier experts in Ayurveda. *Rasapradīpika* (Venkatacharya, 1916), *Ayurveda Ouśadharatnākaraṃ* (Sastry, 1916), *Andhra Bhaiṣajya Ratnāvali* (Sastry, 1925) etc., are some of the noted books in this direction. It seems there was a dark period in India wherein all the indigenous knowledge was snubbed by the British. Some *saṃsthānās* or *jamindarīs* like Vijayanagaraṃ, Peddapuram, Pithapuram, Nujvid, Venkatagiri, Kalahasti, Gadval, and Vanaparti supported Ayurveda medicine for treatment of people of the rural areas as the English medicine was available only in cities and for rich (Sastry, 1961, p.1456). So in 1901, Sri D. Gopalacaryulu started an Ayurvedic dispensary in Madras and published number of books of Ayurveda. Vavilla Ramaswami Sastrulu started a printing press and published number of Sanskrit books with Telugu commentaries in Telugu script so that large number of people can study, and become ayurvedic physicians, who can help the rural population. Great scholars like Achanta Lakshmipathi, Nudurupati Viswanatha Sastry, Puvvada Suryanarayana Rao, Mukkamala Venkata Sastry etc., Ayurveda experts as well as Sanskrit scholars generated excellent Ayurveda literature. Sripada Kriṣṇamurthy Sastry, the court poet of Andhra Pradesh after independence was another great Ayurvedic physician as well as Telugu and Sanskrit scholar and an author of many Ayurveda books.

A number of books on Ayurveda, especially *Caraka saṃhitā, Suśruta saṃhitā, Aṣṭāṅga Hrdayam, Aṣṭāṅga Saṃgrahaṃ, Mādhavanidānaṃ,*

Sāraṃgadhara Saṃhitā, Bhāvaprakaśika etc., were translated to Telugu from Sanskrit by scholars who were experts in both the languages as well as Ayurvedic medicine. Not only translations, but original ayurvedic books in verse were also written, the most notable one was *Rasa Pradīpika, Vyasaprokta Ayurvedaṃ, Agastya Ayurvedaṃ* etc., They have given the English equivalents of the metals and minerals mentioned in the earlier texts. This material is extremely useful for those who want to pursue research on Ayurvedic drugs using modern technological advances and methodologies and concepts.

The first modern scientific book published in Telugu which came to my notice is *Vaidyut Lohaśāstraṃ* (Sarma, 1907) published by Sri Dronaṃraju Calapati Sarma on electrometallic science in 1907 from Manju Publishers, Eluru, Composite Madras state wherein he discussed electroplating of different metals using different electrochemical cells. The first Chemistry book was written in Telugu by Sri Vemuri Viswanatha Sarma entitled *Rasāyana Śāstraṃ* (Sarma, 1910) was published by Vijñana Candrika Mandali, Madras. It is an elementary course on chemistry and it was first published in 1909 and again revised in 1910. This book describes the comprehensive knowledge of that time on chemistry with available very little communications and technology. After independence, some intellectuals with the support of the composite Madras State Government established “Telugu Bhasha Samithi” to bring out Encyclopedias in Telugu on different subjects like literature, culture, mathematics, sciences especially physics and chemistry, etc. They published 12 volumes on different subjects. The volume of Physics and Chemistry (3rd volume in the series) was brought out by Telugu Bhasha Samithi in 1955. A large number of university and college teachers at that time wrote articles, which were edited by great chemists as well as literary scholars like Sri Vasantarao Venkatarao, Medepalli Varaha Narasimha Swami, Vemuri Viswanatha

Sarma and Sri Hari Adiseşuvu etc.,. They have also prepared a small glossary of technical terms of chemistry and physics and presented in the book. In 1967 Telugu Academy was established by Government of Andhrapradesh to provide text books and reference books in different Sciences, Arts and Commerce and Indian Medicine etc., to teach in Telugu medium in undergraduate and post graduate courses. A large number of professors from the universities of Andhrapradesh contributed significantly in writing these books. They published number of undergraduate books and monographs on chemistry and also enlarged the glossary base. Subsequently Telugu Bhasha Samithi was merged into Telugu University under the name "Sri Komarraju Venkata Lakşmana Rao centre for Encyclopedia." They published number of Encyclopedia volumes in different areas. The chemistry volume, 10th in the series, comprised of 800 articles covering different topics including the works of Nobel laureates of Chemistry up to 2009 edited by the author of this article, was published in 2013(Suryanarayana, 2013).

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