J Biodiversity, 7(1): 4-12 (2016)
PRINT: ISSN 0976-6901 ONLINE: ISSN 2456-6543 DOI: 10.31901/24566543.2016/07.01.02

# Ethnobiological Analysis from Myth to Science: XIV. One Hundred Sons of 'Kuru' Dynasty in Epic Mahabharata; Biotechnology in Ancient India to Proliferate Human Diversity

**Sachidananda Padhy**

*Vedic Science Research Centre, Bhaba Nagar-1, Berhampur 760 004, Odisha, India*
*E-mail: sachi_padhy@rediffmail.com*

**KEYWORDS** Epic Mahabharata. Hundred Kuru Brothers. Ancient Biotechnology

**ABSTRACT** The one hundred sons and a single daughter born to parents Dhrutarastra and Gandhari, as depicted in the epic Mahabharata, is ever considered as a myth. Proper analysis of the then situation and deep meaning of the Sanskrit *Slokas*, reveals the science behind the myth, with all possibility of the involvement of biotechnology to have so many children in a single life time of a couple. The technique of germplasm conservation, artificial insemination, foetus transfer from one womb to another and use of surrogate mothers for the development of embryonic tissue was known to ancient Indian scientists, as depicted in symbolic form in Puranic literature.

## INTRODUCTION

The present time is considered as the scientific age of the world. This does not mean that, the earlier human society was not conscious of the scientific events of nature and have not explored them properly. Many of the facts presented in mythical form in our religious epics and as well as in the form of ethics and legends carry a substantial amount of ancient science in hidden form. This proves that, scientific expedition is ever associated with the growth of human society (Padhy 2000, 2009, 2010; Padhy et al. 2001a, 2006). The science 'Ethnobiology' is committed to explore such concealed scientific facts from the literary records of the ancient civilisation and make a fruitful analysis of those at par with the latest developed scientific knowledge and achievements (Padhy et al. 2006). Few attempts in this field since two decades are quite encouraging (Padhy 2006a,b,c, 2013a,b,c, 2014a,b, 2015; Padhy et al. 1996, 1999, 2001b; Panigrahy et al. 2002a,b).

This communication is devoted to explore the biotechnological knowledge of ancient Indians, that ware recoded in the epic Mahabharata, five thousand years ago (Padhy 2015). The hundred sons and a single daughter born to parents Dhrutarastra and Gandhari; virtually impossible with any human couple in a single life span, drags the whole scenario as mythical; is the subject matter of this communication. The methods of literature research followed as reflected earlier (Padhy et al. 2015).

## QUESTIONABLE EVENTS OF DWAPARA YUGA

Indian Puranic literature is a store house of mythical stories. The present age is known as Kali Yuga (Panigrahy et al. 2002b). The previous age was Dwapara Yuga (Srikrishna's period) which ended with the Mahabharata war. The great writer / poet of the previous Yuga was Maharsi Vyasa who has scribed the epic Mahabharata, Bhagawata along with other eighteen Puranas. Three events presented in the above epics are selected, which has some questionable relevance with the modern biotechnology needs introspection as follows.

### 1st Event

In Bhagawata it is narrated that, there was a king named Satyabrata who ruled over the Dravidian territory of ancient India. Once the king was advised by *Bhagawan* Narayan (in his fish incarnation) to save the biodiversity during the ensuing dissolution of the world due to heavy rain and rising of oceanic waves. Accordingly the king collected the plant seeds and animal propagates called *Sattva* and boarded over a vessel along with seven *Prajapitis* during the flood period. The vessel safely sailed during the time of calamity. The biodiversity was re-established by the seven *Prajapatis* afterwards and Satyabrata became the ruler of the next creation as Manu Vaivassvata. Such a rescue process of the biodiversity during the time of dis-

solution according to the divine wish is also narrated in Bible. In this event a righteous man named Noah, who was the 10th generation of Adam, has played the key role like Satyabrata (Padhy 2006c).

The collection of seeds of various crops, medicinal and other plants as a means of conservation is scientific, but the saving of animal diversity in indiscriminate form *Sattva* needs explanation. The Sanskrit English dictionary (Williams 1899) projects the meaning of *Sattva* as – spirit, entity, vital breath, life, foetus and rudiment of life. Scientifically *Sattva* points to indiscernible life form, may be like germ plasma conservation of modern biotechnology. In the next part of the story, Satyabrata was associated with seven great sages known as *Prajapitis*. They were sage scientists responsible to propagate the biodiversity as evident form Manusmruti (1/35) and Bhagawata (8th Part/XXIV / 32-38). They were also reflected as procreators in Gita (10/6) (Padhy 2013). It is difficult to claim that germ plasm conservation was known to Vedic age people, and Satyabrata could do it with the help of seven seers using the *Sattvas*; a conclusion to this effect is left over the modern scientific community (Padhy 2006c).

**2nd Event**

The biology of artificial insemination in ancient India, can be traced out in the legendary epic Manusmruti, which was expected to occur under restricted natural conditions of physical, social, psychological and ethical environment (Mohapatra et al. 2001). This process was known as *Niyoga Prathaa* (process), referred as socially allowed sexual relation with a female (who has either a sterile husband or a widow without issue) by another specific man other than her husband, with the only intention to have a child (son). More to say, *Niyoga* was a natural process of artificial insemination, a significant part of the eugenic concept of ancient Indians (Padhy 2010).

In the epic Mahabharata, repeated practical implementation of *Niyoga* is described to have children in order to save the dynasty (Fig. 1). In the first case the insemination was carried out by saint Vyasa to the widowed daughter in-laws of Satyabati (second wife of King Santanu) named Ambica and Ambalika. The product sons were Dhrutarastra, Pandu and Bidura. The first one was a born blind and the second was an albino. Both were strong, stout and warriors, but for body defect their widow mothers were blamed for the negative mental reaction they expressed during cohabitation with the saint. The third son Bidura was a product through a non *Kshatriya* maiden servant. Ambica and Ambalica, to avoid cohabitation with the saint, secretly projected this servant lady before him in a dark bed room. Bidura, though a learned person and minister, was not accepted as a *Kshatriya*. Moreover, the *Niyoga* word was not used in the epic and the whole event was described as Vyasa's blessings.

In Niyoga, the elder or younger brother of the female's husband, or in their absence any *Sapinda* (Kinsman of the husband) is allowed to donate the sperm (Manu 9/59). But in the above case Vyasa was not from *Kshatriya Varna*. He was the son of Satyabati (the daughter of a fisherman king) and saint Parasara, a product of the former before marriage. Such a son whom a damsel secretly bears in her parental house before marriage is termed as *Kanina Putra* (Manu 9/172). Such off-springs of an unmarried girl belong to him who weds her afterwards, when she declares it at the time of contingency and emergency (Mohapatra et al. 2001). Timely Satyabati declared this event when she wanted to appoint Vyasa to produce children out of her two widow daughter-in-laws. By that time there was no alternate other than Vyasa for *Niyogo*. The eldest son of Santanu from his first wife Ganga was Gangaya (Bhisma), who was under the vow to remain bachelor and not produce children. The Kuru dynasty was almost devoid of any significant male personality.

In the second event, Kunti and Madri wives of Pandu and mother of five Pandavas had their children from divine sources like Dharma, Vayu, Indira and Aswini Kumars. It is physically and biologically impossible with a female to cohabit with the natural powers (*Devataas*) of the environment (Padhy 2013) to have children. Moreover, Kunti had a *Kanina Putra* named 'Karna' from the source of Sun God (Surya). This indicates towards the obscurity of the name of sperm donors that was followed in ancient India. The same ethics is also implemented in the sperm banks of modern days. This hiding of name is done to avoid social problems and demand for the fatherhood by the male partner. The Pandavas: Yudhistira, Bhima, Arjuna, Na-

kula and Sahadeva are recognised and respected as sons of Pandu (Pandavas). The unfortunate Karna being the eldest son of Kunti, was not included in *Kshatriya* caste as he was abandoned by his mother before her marriage and brought up by a non-*Kashitriya* couple. Pandu had permitted his wives to bear children from other sources, as he was suffering from a curse that, he would die if he goes for sexual cohabitation. There are interpretations that, Pandu was a weak personality suffering from chronic jaundice which caused the albino appearance of his body colour. The above presentations prove that sperm donation technology was highly developed in ancient India at par with the modern biology.

**3rd Event**

Basudeva and Devaki, parents of Sri Balarama and Srikrishna were kept in prison just after their marriage by Kansa (the wicked king and brother of Devaki). The prediction was that, Kansa would be killed by the eighth offspring of Devaki, was the reason for this brutal activity and torture of the couple. Kansa promised to kill all the eight children of Devaki. Moreover, the young couple were under surveillance rather than rigorous imprisonment, with all medical facilities and comfort requirements to give birth their eight children. In course of time, the earlier six sons were killed by Kansa and the seventh conception of Devaki was declared as a miscarriage. Srikrishna born as the eighth son of the royal couple. Further life history of Srikrishna is an open text.

Basudeva had two wives, the first one Rohini and second Devaki. Before his marriage with Devaki, Rohini was issueless. Under the disputed circumstances after the second marriage of Basudeva, Rohini migrated from Mathura to Gopa. She was under the protection of King Nanda, a good friend of Basudeva. Virtually there was no physical relation between Basudeva and Rohini as they were at a distance from each other. The puranic literature says that, as soon as Devaki had a miscarriage at Mathura, by that time Rohini conceived at Gopa. The embryo from Devaki's womb was transferred to Rohini's womb by 'Mahamaya' as the epic says. The ambiguous name Mahamaya is ever referred to the cosmic illusion, a female force and a difficult concept to understand and realise. In Indian philosophy Mahamaya is referred as the nature's internal inherent power that works in obscurity and forces a being to experience the good and bad results of deeds in his life. In the present context, it can not be ruled out that Mahamaya was a royal Gynaecologists who was looking after Devaki and secretly transferred her foetus (7th conception) to Rohini's womb. Rohini gave birth to Sri Balarama at Gopa, who was regarded as the elder brother of Sri Krishna. This fact more or less, was known to everyone by that time in the family. Rohini had no ill reputation for this conception and motherhood in the absence of her husband. This indicates a public consciousness of such event. Rather in future, Sri Balarama is nick named as Rohini *Suta* (son) and Srikrishna as Devaki *Suta*, an adornment to their concerned mothers.

In an event described in the epic Bhagabata (X Skanda, Fifth Chapter, 27 *Ssloka*), during a conversation between Basudeva and Nanda at Mathura, during the later's visit to pay annual taxes to King Kansa, the former asked "my son (Balarama) remains with his mother (Rohini) with your family at Braja (Gopapura). You and your wife Yosada take care of them. Is he alright there with his mother ? He must be respecting you both as his parents". This conversation shows that Basudeva and Nanda both were aware of Devaki's embryo transfer. Rohini played the role of surrogate mother is not described in the epic. More to add here, that Devaki's eighth child Srikrishna was exchanged with the girl child of Yosada (both delivered on Janmasthami night, Bhadrab month) by Basudeva; the fact was not known to Nanda. Rather Nanda expressed his regret to Basudeva during the conversation, for the killing of their girl child by Kansa. The Secret of the birth of Srikrishna was not known to anyone else other than his parents.

## ONE HUNDRED SONS OF GANDHARI – A MYTH

Because of blindness, being the eldest son in the family, Dhrutarastra could not enjoy the throne of Hastina. Younger Pandu ruled over the country. In spite of his humbleness towards his elder brother, Dhrutarastra was not happy with the situation. Due to ill health, Pandu sacrificed the throne and went away to Himalayas for austerity. Dhrutarastra, temporarily became the king. There was a silent competition between

the families of two brothers to produce sons to become the crown prince. As discussed earlier, Pandu permitted his wives for *Niyogo*. Coincidently Gandhari (wife of Dhrutarastra) and Kunti conceived at the same time. Both were eager to give birth the first male child. Some abnormality happened with Gandhari and she could not deliver the child even after the tenth month of conception. Meanwhile Kunti gave birth a male child (Yudhistira) being inseminated (*Niyogo*) by the mythical personality Dharma. Gandhari, out of frustration hit repeatedly over her womb and finally delivered a mass of tissues. She was about to throw the mass; suddenly Vyasa appeared there, consoled her and advised to arrange one hundred pots of *Ghruta* (Ghee). The tissue mass was dissected to one hundred pieces and each piece was kept inside a *Ghruta* pot for further growth. One extra piece was inoculated separately with the expectation that it carried female genome (XX). All the one hundred and one pots were kept under careful supervision. After two years, one hundred sons appeared inside the pots and a girl child in the extra pot. Duryodhana was the eldest among them.

Before analysis of the above mythical story from scientific point of view, some steps of modern biotechnology to have test tube babies can be discussed are as follows:

## ASPECTS OF MODERN BIOTECHNOLOGY

During the past few decades great efforts have been made to implement the science of biotechnology for the development of transgenic animals (mouse, chicken, cow, fish, pig, rabbit, sheep and goats). *In vitro* fertilization and embryo transfer in livestock and humans are the most successful techniques in biotechnological research. The babies produced using this approach are popularly known as 'Test tube babies'. This technique is being widely used in many countries to provide the joy of having their own child to human couples suffering from infertility because of various reasons. The first test tube baby of the world is Louise Joy Brown, born on July 25, 1978. The mother of joy brown passed away in the year 2013.

Infertility in females may occur due to (1) non-functional or absence of ovaries, (2) nonfunctional or absence of uterus and it maybe (3) an idiopathic infertility with no specific explanation. In man for normal fertility the sperm concentration should be 15-20 million per ml. A reduced level of sperm count is described as oligospermia, while the absence or very low concentration of sperm is known as Azospermia.

The whole process of *in vitro* fertilization and embryo transfer is followed as described below:

1. The union between egg cell and sperm, if it occurs outside the body in a culture vessel, is known as *in vitro* fertilization.
2. In the first step the oocytes are collected from the females desirous of having a baby. If the female has normal ovaries but defective or damaged / blocked fallopian tubes, she should be treated first for rectification. But, when the sterility is due to absence or non-functional ovaries, the oocyte have to be collected from a donor female.
3. In a healthy female, the menstrual cycle occurs in every 28 days difference. Mostly in the mid of two periods, the natural ovulation occurs. This approach yields only one ovum per female / cycle. The time of natural ovulation is determined by monitoring the rise in the level of luteinising hormone either in urine or in blood. The ova is recovered during this time, either form the female concerned or the donor.
4. Ovulation may be stimulated by the administration of clomiphene and human menopausal gonadotropin. This approach yields several oocytes form a female. The oocytes can be collected by laparoscopy at a convenient time.
5. The semen from the prospective father is collected about 60-90 minutes prior to fertilization, liquefied and centrifuged. The sperm pellet so formed is resuspended in culture medium and incubated for 30-60 minutes at 37°C. If the male concerned suffers from oligospermia or azospermia, semen may be collected from a suitable donor.
6. Oocytes are incubated for 5-10 hours in suitable media for further maturation. Fertilization is effected by adding $10^3$-$50^3$ motile sperms into one ml of culture medium in which the oocyte is being incubated. The oocyte is examined after 12 hours to check the fertilization status. The first division of the zygote occurs about 24-30 hours after insemination followed by each subsequent division after 10-12 hours.

7. The embryo so developed at 8-16 cell stage is carefully transferred into the uterus of the receiving female. The correct stage of her menstrual cycle is to be ascertained, so that her uterine environment is properly tuned to receive the embryo. If the female desiring to have the baby has (a non-functional ovary, absence of an ovary) a defective uterus, a surrogate mother may be used as the embryo recipient.

## GANDHARI'S AMBIGUOUS LABORATORY

Plant cells are totipotent and can develop into whole plant irrespective of their origin, form any part of the plant body. The pieces of well grown tissues used for tissue culture purpose are known as explants. Mostly explants are taken from actively growing parts of a plant. The method of aseptic culture of isolated living tissues in an artificial medium is called tissue culture. In this technology, the sterile explants are transferred under aseptic condition to nutrient medium maintained in culture vessels. The inoculated tissue are allowed to grow and differentiate being incubated in culture room under controlled conditions. Finally, passing through different stages of development in culture, miniature embryonic plants are grown inside laboratory culture vessels, which are transplanted to field.

As referred earlier, the whole process of culture of Gandhari's delivered tissue pieces in *Ghruta* vessels, is much more like the technology adopted in a plant tissue laboratory of modern science. The meaning of Sanskrit word *Ghruta* is cream of anything substantial (like milk), can be compared with the well planned nutrient solution used in culture medium of modern technology. In Gandhari's laboratory, the human embryonic tissue pieces were inoculated into *Ghruta* vessels similar to the culture vessels of modern science and everything was kept under careful supervision under isolated condition (aseptic environment).

As narrated in the epic, the whole process of tissue transfer in Gandhari's laboratory was conducted by the direction of Vyasa. The meaning of Sanskrit word Vyasa is a dissector. Maharshi Krushna Dwaipayana, the original name of Satyabati's '*Kanina Putra*', the key person who composed the epic Mahabharata, was given a nick name Veda 'Vyasa'. Since he conglomerated the scattered Vedic knowledge and divided it into four groups: Rig, Saam, Yajur and Atharva, the above nick name was conferred over him. He is also known as *Jagatguru* (Teacher of the world). He inseminated in the *Niyoga* process to save the Kuru dynasty as discussed earlier. In the present context, if the dissection of the tissue mass delivered by Gandhari was done by Maharshi Vyasa, he must be adorned as a scientist, surgery specialist and biotechnologist. Otherwise, there were two personalities named Vyasa one, the above referred saint poet and the other was a true scientist aware of practical biotechnology. It is a big question without an answer; who was 'Vyasa'? may be the whole event was carried out by the later with the advice of the former.

If we look to Gandhari's conception from gynaecological point of view, it was a molar pregnancy. In such case, the embryo grows to some extent without any differentiation of tissue and finally becomes a living static tissue mass or dead. The mass of tissue looks like a bunch of grapes. In Gandhari's case the tissues were not dead, since they differentiated again actively under suitable circumstances. The whole irony is, animal cells including human cells do not have totipotency and only can be manipulated and used for the development of a child in gametic stage or restricted growth stage of embryo inside a womb only. The growth of a human embryo (as well as animals) is possible inside the uterus of the concerned mother or a surrogate / substitute mother. In such a situation, the description about the growth of Gandhari's babies following a plant tissue culture technique seems to be false. It is presented in such a fashion due to some other reason, which is discussed later.

## SECRET FACTS OF EPIC MAHABHARATA

In the epic Mahabharata, many facts are omitted or represented in symbolic form. This is responsible for the creation of different myths. A scientific approach to analyse the myths are as follows:

1. As far as possible one hundred one surrogate mothers were employed to receive the undifferentiated embryo segments of Gandhari. Under the circumstances, we have to assume that the menstrual cycle and uter-

ine condition of these mothers were congenial to receive the embryonic tissue. May be some other technology was known to earlier civilization, to monitor the uterine environment of a female before cohabitation to ensure fertilisation. This conclusion is based on various (only) single sexual events between the partners and production of child, as depicted in different other Puranic epics along with Mahabharata. The use of surrogate mothers was kept secret in the epic and they are referred as *Ghruta* vessels. Another assumption should be made that, the success of the event was hundred percent, since there was no written evidence of failure.

2. The inoculated embryonic tissues finally developed hundred sons and a girl child. It is mentioned in the epic that, the babies were released from the *Ghruta* pots after two years. The normal incubation period of a human child in mother's womb is ten months only. The two years period is an ambiguous application. Moreover, it is written that, Vyasa advised to open the lids of the pots after two years. This was an advice with a dual meaning. Indirectly he mentioned that the matter may be made open to public after two years, after the breast feeding period is over. Events that occur inside a King's family are hardly publicised out and/or rarely questioned by public. In this case also, the public were notified that Gandhari was blessed with one hundred sons and a daughter, Duryodhan being the eldest one.
3. There were twin embryos in Gandhari's womb – one male and other female. The male embryo turned to a mass of tissues while the female one had comparatively restricted growth, during the molar pregnancy. The male tissue mass was segmented but female embryo was transferred as such to the surrogate mother, ultimately produced one daughter named Dusshella.
4. Puranic literature says that, Gandhari was a maiden from the country. Gandhara (now 'Kandahar' in Afghanistan). She came to her in-laws house along with a good number of young maid servants. Generally in royal families maid servants were given as marriage gifts (*Jautuka*) along with the bride. Probably these maids were used as surrogate mothers, those who were only limited to the premises of King's palace. This was another reason why the fact was not publicised.
5. In Indian society the Varna division as *Brahmana, Kshatriya, Vaisya* and *Ssudra* was strictly followed in ancient India which has taken a shape of *Jati* in the present context. The mixed origin children (*Varnasankaras*) are not considered as pure *Varna* and they are devoided of performing their normal duty. In this context the *Varnasankar Kshatriya* product is unfit to be the King of a country (as Bidura, discussed earlier). The product of a *Kshatriya* male and *Vaisya* female, the child is considered as lower *Kshatriya*. Similarly the product of a *Kshatriya* male and *Sudra* female is an *Anuloma Varnasankara* called 'Ugra', ferocious in his manners and crude. Reversely in *Pratiloma* inheritance the product of a *Kshatriya* female and *Vaisya* male is 'Magadha' (occupation – Trade) and *Kshatriya* female and *Ssudra* male is 'Kshatta' (similar to Ugra) (Padhy 2010). All the above with some sort of *Kastriya* genetic combination are not regarded as *Kshatriya* and unfit to be king of a country. A team of researchers has tried to prove the genetic relevance of *Varna* division of India from modern scientific point of view (Bamshad et al. 1996, 1998).
6. During Gandhari's conception time, a *Ssudra* female was in personal service of Dhrutarastra. Subsequently she was made pregnant by her master and had a son named Jujukshu, who was not included in the *Kshatriya Varna* but was accepted in the family (like his uncle Bidura).
7. At a particular time the Kuru dynasty was passing through a critical time. The throne was in uncertainty after the departure of Pandu. Dhrutarashtra was temporarily managing as the King. The *Niyogo* products of Kunti were young enough to take up the responsibility of the Kingdom. The blind Dhrutarashtra was selfish with all negative thoughts. In this juncture time in order to save the dynasty, saint Vyasadeva very cleverly omitted the whole birth event of hundred sons which occurred with the use of surrogate mothers. Moreover, he had a weakness towards the dynasty, which was

revived by his *Niyogo* earlier. It was certain that the surrogate mothers were not of *Kshatriya Varna*. That will certainly reflect on the integrity of the *Kshatriya* dynasty. It was also a hard task to get one hundred young *Kshatriya* female for the purpose at a time. Vyasadeva has tactfully controlled the situation in right time and has publicised the embryo transfer technology through plant tissue culture techniques. The use of surrogate mothers was kept secret and accordingly reflected in the epic Mahabharata.

8. Surrogate mothers do not contribute genes to their children. But mother's impact as *Samskara* (metaphysical character transfer) of the child can not be ruled out. In this context, a book published by Sri Aravindo Ashram, Pondicherry – "Pre-natal education towards a Glorious Future' can supply enough feedback. The negative characters of Duryodhana and his ninety-nine brothers stands similar vis-à-vis with their maternal uncle Sakuni, an inhabitant of Gandhara country. Sakuni is narrated as the most wicked personality of Mahabharata, who was the key person for all the wicked events. Since the surrogate mothers were from Gandhara, their negative epigenic characters might had reflected on their children.

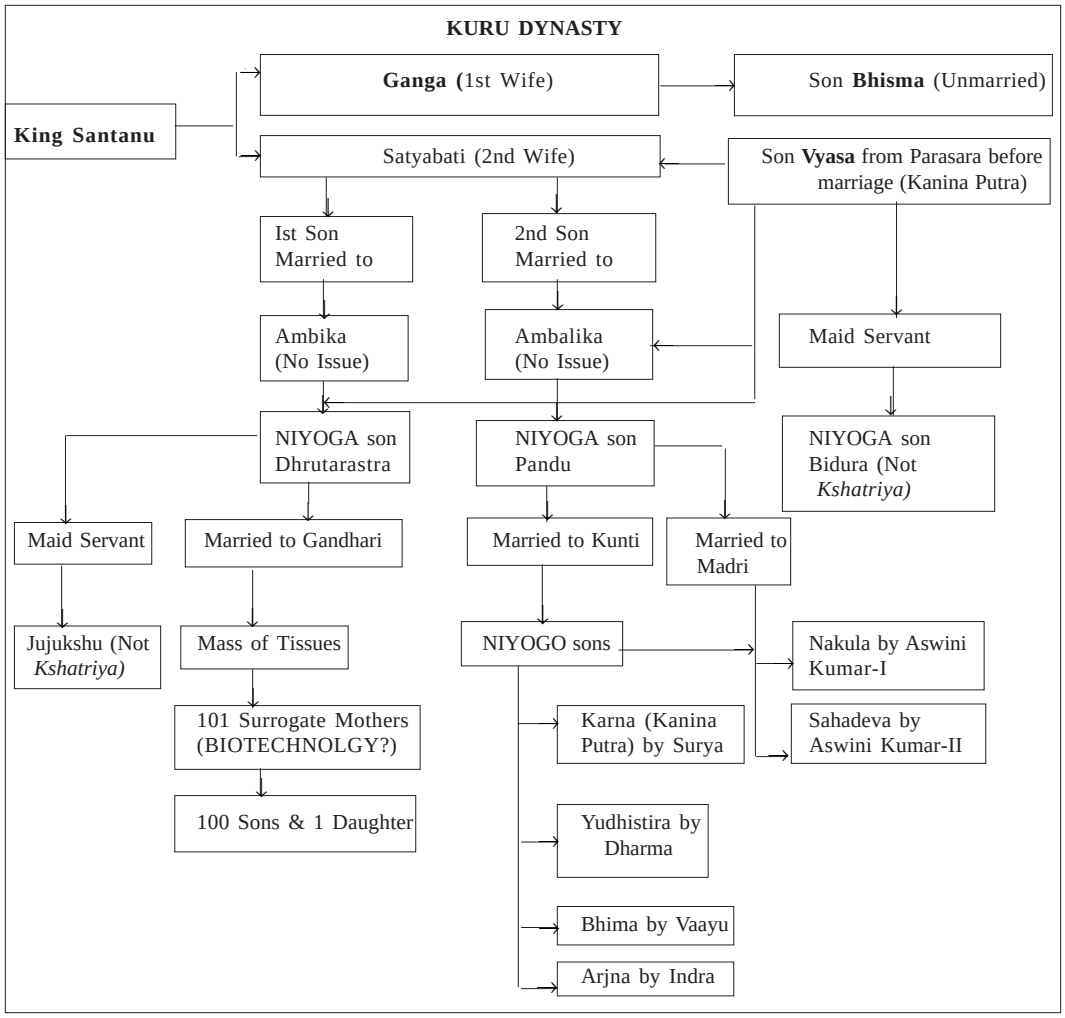


**Fig. 1. Growth of Kuru Dynasty through Niyoga and Biotechnology**

Comparatively Jujukshu was calm and sober than his so called one hundred *Kshatriya* brothers. He joined with the Pandavas in the Mahabharata war at the spot in the battle field. A keen analysis of the characters of Duryodhana and his brothers finds their similarity with the *Ugra Varnasankara* as discussed earlier, that silently supports the theme of all the events. Moreover, the one hundred names of the Koura-va brothers is interpreted and equalized with the one hundred negative characters of a human being, that prevents the progress in the spiritual line as per Yoga Philosophy (Sanyal 1962). For example, the name of eldest brother Duryodhana means a personality who listen others like a fool.

## CONCLUSION

It is difficult to draw a concrete conclusion that, biotechnology was known to ancient Indians. A deep analysis of facts, bring out positive inferences as depicted earlier, goes with the saying – "There is no heat without fire". Some sort of science remains in hidden form behind the myths narrated in the ancient epics. In earlier days, it was a difficult task to inscribe facts on palm leaves. Elites used to focus symbolic terms with multi-channel meanings, to describe a fact in shortest possible space. This is also a solid reason for viewing a fact as myth by a reader after thousands of years. May be, many of the facts which we consider as important today, were very common in ancient days and were not emphasized in the descriptions.

The whole activity in Gandhari's Laboratory can be focused as follows (Fig. 1).

- Gandhari delivered a mass of living tissues due to molar pregnancy.
- Non-*Kshatriya* females were used as surrogate mothers to receive the undifferentiated embryo segments.
- With the assumption that, the success of the event was hundred percent, one hundred sons and a daughter were born in due time.
- The news: "Gandhari was blessed with one hundred sons' was released to the public after the breast feeding period is over that is, two years.
- To save the integrity of the Kuru dynasty, the embryo transfer technology was omitted and published through a mysterious plant tissue culture technique (tissue developed to child inside *Ghruta* pot) by Vyasa in the epic Mahabharat.
- The one hundred sons of Gandhari were affected by the negative epigenic characters (*Samskara*) of their mothers,

In addition to *Niyogo*, embryo transfer and germ plasm conservation; the earlier civilization was in favour of polygyny and polyandry. There are many examples in Mahabharata for the former, while Droupadi's marriage with the five Pandaba brothers is the best example for the later. Moreover, the earlier society had accepted a child (*Kanina Putra*) produced by a damsel (from whom ever it may be); which she declares at the time of need in future. All the above narrations create a vista to evaluate the socio-scientific depth and magnanimity of the then society.

## REFERENCES


Bamshad M, Fraley EA, Carwford HM, Cann R, Buse BR, Naidu JM, Jorda I 1996. mtDNA variation in caste populations of Andhra Pradesh, India. *Hum Biol*. 68: 1-28.

Bamshad M, Watkinst WS, Dixon ME, Jorda BL, Rao BB, Naidu JM, Prasad BVR, Rasanayagams A, Hammers MF 1998. Female gene flow stratifies Hindu castes. *Nature*, 395: 651-652.

Mohapatra R, Dash SK, Padhy SN 2001a. Ethnobiological studies from *Manusmruti - IX. Niyoga Prathaa;* A natural process of artificial insemination. *J Hum Ecol*, 12(1): 33-38.

Padhy SN 2000. Studies on ethno-ecology and genetics of Vedic age as retrieved from the compendium *Manusmruti* - A review. In: MK Bhasin, Veena Bhasin (Eds.): *Man - Environment Relationship*, Delhi: Kamla-Raj Enterprises, pp. 103-117.

Padhy SN 2006a. Ethnobiological analysis from myth to science, V: Thought vibration - A Human Environmental factor. *J Hum Ecol*, 20(2): 139-145.

Padhy SN 2006b. Ethnobiological analysis from myth to sciences, VI: Synchronized concept on genesis as depicted in Ancient Compendia of East and West. *J Hum Ecol*, 20(3): 215-219.

Padhy SN 2006c. Ethnobiological analysis from myth to science VII: Human endeavour for conservation of bio-diversity at the juncture of dissolution, as reflected in religious epics of east and west. *J Hum Ecol*, 20(4): 301-308.

Padhy SN 2009. *Pancha Yajnya* (Five Sacrifices): The scientific philosophy of human ecological responsibility since the Vedic age - A review. In: Veena Bhasin, Charles Susannae (Eds.): *Anthropology Today: Trends and Scope of Human Ecology*. New Delhi, Kamla-Raj Enterprises, pp. 157-177.

Padhy SN 2010. Studies on eugenic concept of Ancient Indians - A review from *Manusmruti*. In: MK Bhasin, Charles Susannae (Eds.): *Anthropology Today: Trends and Scope of Human Biology*. New Delhi, Kamala-Raj Enterprises, pp. 101-123.

Padhy SN 2013a. Ethno-ecological introspection into *Bhagawatgeetaa*. 1. The cosmic ecology. *J Hum Ecol*, 42(3): 223-231.

Padhy SN 2013b. Ethno-ecological introspection into *Bhagawatgeetaa*. 2. Principles and components of the ecosystem. *J Hum Ecol*, 42(3): 203-209.

Padhy SN 2013c. Ethno-ecological introspection into *Bhagawatgeetaa*. 4: Ecological responsibility of human beings. *J Biodiversity*, 4(2): 79-82.

Padhy SN 2014a. Ethno-ecological introspection into *Bhagawatgeetaa*. 3: Conservation and ramification of biodiversity. *J Hum Ecol*, 45 (1): 41-48.

Padhy SN 2014b. Ethno-ecological introspection into *Bhagawatgeetaa*. 5. Guna (Quality): The metaphysical factor of nature, responsible for diversity. *J Hum Ecol*, 45(3): 177-182.

Padhy SN 2015. An ethno-ecological introspection of the Bhagawat Gita: 6. The presented distorted environment compared to five thousand years ago. *J Hum Ecol*, 51(3): 227-240.

Padhy SN, Mohapatra RP, Dash SK, Mohanty RB 1996. An explanation for a myth in *Matsyapurana*. *Ancient Science of Life*, 16: 139-141.

Padhy SN, Dash SK, Panigrahy KK, Padhy RP 1999. Ethnobiological analysis from myth to science: I. *Panchamukhee Hanumaan*, an empirical representation of ancient animal classification. *J Hum Ecol*, 10(5 and 6): 389-393.

Padhy SN, Dash SK, Mohapatra R 2001a. Human environment, as introspected by the Sages and Seers in Vedic age: A contemplative scientific review from *Manusmruti*. In: Veena Bhasin, VK Srivastava, MK Bhasin (Eds.): *Human Ecology in the New Millennium*. Delhi: Kamla-Raj Enterprises, pp. 177-200.

Padhy SN, Dash SK, Mohapatra R, Panigrahy KK 2001b. Ethnobiological analysis from myth to science: II. *Samudra Manthan*, A symbolic chronological process for re-establishment of the Human Ecology. *J Hum Ecol*, 12(4): 293-300.

Padhy SN, Dash SK, Mohapatra R 2006. Environmental laws of Manu: A concise review. *J Hum Ecol*, 19(1): 1-12.

Padhy SN, Dash SK, Mohapatra R 2015. Ethno-biology: The science of a common man to explore the traditional ecology, biodiversity and philosophy of conservation: A review. *J Biodiversity*, 6(1,2): 9-21.

Panigrahy KK, Panigrahy GK, Dash SK, Padhy SN 2002a. Ethnobiological analysis from myth to science: III. The doctrine of incarnation and its evolutionary significance. *J Hum Ecol*, 13(3): 181-190.

Panigrahy KK, Panigrahy GK, Dash SK, Padhy SN 2002b. Ethnobiological analysis from myth to science: IV. Kaliyuga - the descending human ethical environment. *J Hum Ecol*, 13(4): 263-269.

Sanyal Bhupendranath 1962. *Srimadbhagabadgita* (Part-1). JP Tewary, BB Lal (Eds.). Mandar, Bhagalpur, India: Hindi Prakashan Samiti, Gurudham.

Williams MM 1899. *A Sanskrit English Dictionary*. Delhi: Motilal Banarasidas Publishers.

**Paper received for publication on June 2016**
**Paper accepted for publication on July 2016**