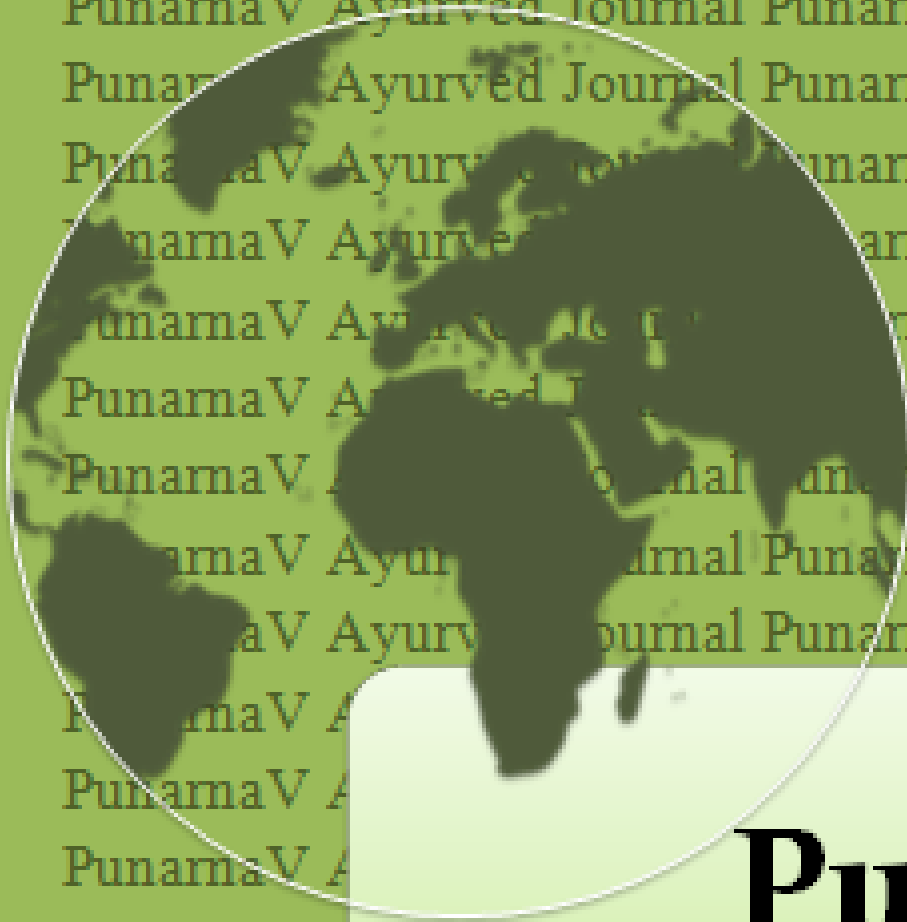


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TITLE

**REVIEW OF ATULYAGOTRIYA AND ANUVASHIKI SIDDHANT WITH SPECIAL
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**REVIEW OF ATULYAGOTRIYA AND ANUVASHIKI SIDDHANT WITH SPECIAL
REFERENCE TO CONSANGUIOUS MARRIAGE****GAYATRI S. DESHPANDE¹, PRAJKTA M. KULKARNI²****¹ ASSISTANT PROFESSOR, DEPARTMENT OF SANSKRIT SAMHITA
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AYURVED MAHAVIDYALAYA, PUNE, MAHARASHTRA, INDIA.****ABSTRACT:**

Ayurveda is the science of life. Though it is ancient, it has many topics which have been treasured and relevant in today's world also. Various important topics related to sharir rachana (anatomy) are described in Ayurveda. Most important is garbha sharir. Main objective of garbha sharir is suprajanan. So precautions to be taken before conception, during pregnancy and after delivery all are described in detail. Even progress of transmission of congenital defects and hereditary diseases is also mentioned. 'Atulyagotriya' is one of the concepts amongst them. In Atulyagotriya it is clear that mother and father should be of different gotra for healthy offspring. Modern medicine has also described similar concept as consanguineous marriages and its effects on offspring's also observed. So here we will discuss concept of Atulyagotriya and its relation to genetical diseases with special reference to consanguineous marriages.

KEY WORDS: *Atulyagotriya, Anuvanshiki siddhant, , Consanguineous marriages. Hereditary diseases, Uttarbasti*

INTRODUCTION

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Ayurveda is ancient science and it has his own basic principles. *Sharir sthana* of *bruhatrayee* deals with sharir rachana. *Garbha sharir* is one of the basic concepts described in it. While describing *garbha sharir* each and every minute point is taken into consideration. In *Ayurveda garbha sharir* starts from selection of parents for healthy fetus (selection of female and male for mating). Then factors affecting fetal health, precautions to be taken before conception (*Rutumati charya*), during pregnancy (*garbhini charya*) and after delivery (*sutika charya*) are mentioned in detail¹. Even process of transmission of hereditary diseases and congenital defects are also described i.e. *anuvanshiki siddhant*.²

Consanguineous marriage is similar concept to *atulyagotriya* to some extent. Effects of consanguineous marriages on their offspring's are also noted. Especially genetic or hereditary diseases are transmitted in their offspring. The branch of biology that deals with inheritance is

called genetics. Inheritance is the passage of hereditary traits from one generation to the next. It is the process by which you acquired your characteristics from your parents and may transmit some of your traits to your children.³ study of genes, heredity and variation in living organism which is strongly linked with the study of information systems is called as genetics⁴. Modern embryology is greatly advanced in this field and describes each aspect about formation of embryo and its development.

Genetic theory is also described in *sharir sthana* of various ayurvedic compendia. These concepts need to be interpreted in proper way to make them applicable and also to comprehend this knowledge on the basis of present theory.

MATERIAL AND METHODS

- Various ayurveda samhitas with their commentaries by different authors.
- Supportive texts of contemporary science
- Reference from internet and journals.

OBSERVATIONS (LITERARY REVIEW)

REVIEW OF ATULYAGOTRIYA

In *Charak samhita* 2nd *adhyaya* of *sharir sthana* is *atulyagotriya*. This name is given because first *sutra* of this chapter

starts with this term. This method of naming chapter is from *upnishad kala*. Here basic rule for mating of male and female is given as they should be *atulyagotriya*. It means they both do not possess same *gotra*.⁴ While commenting on this sutra, *chakrapani* explained that this rule is based on religious myths. *Sagotra maithuna* is prohibited by *dharmashastra*.⁵

24th chapter of *Sushrut samhita chikitsa sthana* deals with all aspects regarding *vyavaya*. In this chapter it is mentioned that female having same *gotra* should be avoided for *maithuna*. Its effects are also mentioned there. If mating of male and female having same *gotra* takes place it causes decrease in *drushti*, *ayu*, *teja* and also it is mentioned as *adharna*.⁶

Kashyapa samhita especially deals with mother and child health. All factors regarding conception, before conception, after delivery as well as child health etc are described in it. In *sharir sthana* of *kashyapa samhita* 2nd chapter has similar entity – *asaman gotriya*. Unfortunately at present this chapter is not fully available. Name of chapter and first some *sutras* are not available. But from last *pushpika* it can be concluded that name of chapter is *asamangotriya*. It means mating of male and female having same *gotra* is also prohibited here.⁷

In *Bhel samhita* also 3rd chapter is named as *asamangotriya*. Male and female should have different lineage. It is stated that one should go to a lady of different *gotra* after she has bathed following menstruation. Then only she will give birth to a son who is brilliant and disease free.⁸

In 5TH chapter of *Bhavaprakash* female prohibited for sex are mentioned. Here also *Sagotra* female are prohibited.⁹ In *Manusmruti* also mating of *sagotra* male and female is prohibited.

REVIEW OF GOTRA

The word *Gotra* has come from rigvedic era. As a rigvedic term *gotra* simply means “cow shelter” or “herd of cows”. The specific meaning “family, lineage kin” is relatively more recent, first recorded around the mid first millennium BCE (Chandogya upanishad). In simple terms it means “enclosure” i.e. group or community. The deeper meaning refers to family and lineage kin. In reality, it refers to the family descendants from a common ancestor. Scientifically in some way, it also signifies the origin of a particular community having common features and behaviors. It was first popular among Brahmins only as they used to classify people belonging to common analysis the trails of their ancestor. The result was efficiency in the work field and best utilization of resources and skills. Panini

defines “gotra” for grammatical purpose as *apatyam pautraprabhrti gotram* which means “the word gotra denotes the progeny beginning with the son’s son.

According to Bruhadaranyaka upnishad this system is directly derived from *Gautama, Bharadvaja, Vashishtha, Kashyapa, Vishwamitra, Jamadagni and Atri* popularly known as *Saptarshi*. Along with that later name of *Agastya muni* was also added to call them as *Gotrakarins*. So basically all 49 gotras we have in our society has been handed down from them¹¹.

Gotra is different from *kula*. *Kula* means group of person with common cultural rituals. *Kula* does not relate to lineage or caste. *Gotra* can be sometimes used as surname. Basically *gotra* of any bride or groom are coming from their father. It is common practice to check the *gotra* of a bride and groom before marriage is fixed. Both belonging to the same *gotra* cannot get married as they are considered to be sibling.¹⁰

RELEVANCE OF GOTRA TO MODERN BIOLOGY

A human has 23 pairs or 46 chromosomes and in each pair one chromosome comes from the father and the other comes from the mother. So in all we have 46 chromosomes in every cell. One member of each pair is inherited from

each parent. The two chromosomes that make up each pair are called homologues chromosomes; they contain similar genes arranged in the same order. The exception to this rule is one pair of chromosomes called the sex chromosome, designated X and Y. In female the homologous pair of chromosome of two large X chromosomes, in males the pair consists of an X and much smaller Y chromosomes.¹¹ Out of which only one pair determines whether a boy or girl will be born, so it is also called sex chromosome. Basically the chromosome of a boy is XY and girl is XX. X has female attributes while Y has male attributes. During initial embryonic stage if an embryo has XY chromosome, the female attributes are suppressed by the genes (basic building block of life) in Y chromosome and eventually a male child is born. Since only men have Y chromosomes son always gets his Y chromosome from his father and the X chromosome from his mother. On the other hand daughters always get their X chromosomes one each from both father and mother. So Y chromosome is always preserved throughout a male lineage because a son always gets it from his father while the X chromosome is not preserved in the female lineage because it comes from both father and mother. A mother will pass either her mother’s X chromosome or her father’s or combination of both to her children

because of both of her X chromosomes getting mixed. (called cross over) on the other hand , a son always gets his father's Y chromosome and that too almost intact without any changes because there is no corresponding another Y chromosome for any mixing.

Y chromosome is the only chromosome which gets passed down only between the men in a lineage; hence it plays a crucial role in modern genetics in identifying the genealogy i.e. male ancestry of a person. And the gotra system was designed to track down the root of Y chromosome of a person quite easily.

So we can see clearly that, in a son, Y is derived from his father which in turn, he has received from his grandfather and so on belonging to same gotra. So the link never breaks, but in a daughter X that comes from mother and father as mother's X chromosome might have come from her father or mother belonging to different gotra. So always father's gotra is taken into consideration.

So basically gotra of any bride or groom are coming from their father. It is common practice to check the gotra of a bride and groom before marriage is fixed. Both belonging to the same gotra cannot get married as they are considered to be sibling or cousins. Marriages under such situation would otherwise be considered as incest which is heavily looked down upon

by the society with hatred. But scientifically, the fact is highly supportive as we know from biology that Y chromosome is similar in all males among same gotra and likewise for X chromosome in females. So when an offspring is born to them, a high chance of future disease and physical inability increases. The offspring can be unfit and weak.

**REVIEW OF ANUVANSHIKI
SIDDHANT (AYURVEDIC THEORY
OF TRANSMITTING GENETIC
DISORDER OR CONGENITAL
DEFECTS)**

In *Charak samhita*, *sharirsthana* 3rd chapter deals with *anuvanshiki siddhant*. During fertilization if part of seed (sperm or ovum) is damaged in its genetic source, abnormality in the fetus takes place otherwise not.

It is stated that congenital defects in the fetus depends upon *upatapta beejabhaga* of *beeja*. *Chakrapani* explained *beeja* as *shukra* and *shonita*. *Beeja* itself contains multiple *beejabhaga*. Each *beejabhaga* has capacity to reproduce the entity like itself. So every *beejabhaga* produces different organs in the fetus. *Vikruti* of some parts (*beejabhaga*) of *shukra* and *shonita* gives rise to defects in particular organs developing from that part¹². It is mentioned that specific organs develop from *stree beeja* and *purusha*

beeja. Those which develops from *matrubeeja* are said *matruja* and they are *twak, rakta, mansa, meda, nabhi, hrudaya, kloma, yakruta, pleeha, vrukka, basti, purishadhana, amashaya, pakvashaya, uttarguda, adhoguda, kshudranta, sthulantra, vapa* and *vapavahan*.¹³ So root seeds of all these organs are cited in *stree beeja*. When any part of *stree beeja* gets destroyed partly or completely, ultimately it turns into defects in respective organ originating from that specific part. Same theory is stated about *shukra – purusha beeja*. *Pitruja bhava* are listed as *kesha, shmashru, nakha, loma, danta, asthi, sira, snayu, dhamani* and *shukra*.¹⁴

Every individual is unique and different from one another. *Ayurveda* believes that 'atma' is different in every living being and depending upon its qualities or we can say some type of stored information the developmental process progresses in the embryo. From then the differentiation takes place from person to person. In most of the references while explaining cause for certain soul to enter in specific combination of ovum and sperm, it is stated that it depends on righteous and unrighteous acts performed by soul in its previous birth¹⁶.

Righteous and unrighteous acts related to genesis are the type of information stored which is helpful for

rebirth of an individual. Depending upon a type of stored information soul enters in the combination of ovum and sperm. If the stored information is compared with fundamental of existing science it is comparable with chromosomes of modern science. As we know the number of chromosomes is unique for any species and takes part in process of reproduction. Appearance of merits and demerits in the development of organ is depends upon chromosome which in Ayurved is a result of righteous and unrighteous deeds of *atma*. So it may be comprehended as genetic information.¹⁵

REVIEW OF ANUVANSHIKI SIDDHANT IN MODERN SCIENCE (GENETICS)

It is known that whenever there is formation of any body part during genesis the whole information regarding its development is stored in concerned gene. This stored information guides the complete course of development of any organ.

Anuvanshiki siddhant is fully developed in modern science as genetics. Same theory as in Charak samhita is also stated by modern science. Wilson in his experiments shows that in certain mollusks, if a portion of the egg is cut off, the remaining portion upon fertilization develops into a defective animal that is not a whole embryo, but rather a piece or

fragment of embryo. Or if the fertilized egg after its first segmentation is separated artificially into two independent cells, each develops an embryo, but neither one is completely formed- each is lacking in certain structures and the two must be taken together to constitute an entirely normal animal. By experiments of this kind it has been shown that certain definite portions of the egg are responsible for the formation of particular organs in the adult. If these portions of the egg are removed the organs in question are not developed¹⁶.

Genetics is the science that deals with the transmission of characters from parent to the off springs. The branch of biology that deals with inheritance is called as genetics. Inheritance is the passage of hereditary traits from one generation to the next.¹⁷

Genes –A chromosome contains thousands of hereditary units called genes that control most aspects of cellular structure and function.¹⁸ Genes are the units of heredity. They transmit particular characters from parents to the off springs. These are composed of specific DNA molecules. They are important in the progress of transmission as well as production. Due to mutation they become abnormal and produce hereditary disorders.

Mutation – A mutation is a permanent heritable change in an allele that produces a different variant of the same trait.¹⁹ A change in base pair of DNA is called as

mutation. It may be spontaneous or due to chemical or physical agents like radiation. The marriages between first cousins, uncles and nice are more prone for genetic disorders. Cause of possibility of these disorders is inheritance of parents and children, siblings as they share half of their genetic material. That's why it is more common for these marriages with a fate of having genetic disorders in the offspring.

REVIEW OF ATULYAGOTRIYA FROM MODERN MEDICINE I.E. CONSANGUIOUS MARRIAGE

In modern, concept of consanguineous marriages is similar to that of atulyagotriya to some extent. Blood related marriages are called consanguineous marriages. Sanguine means blood. According to WHO guidelines a consanguineous marriage is defined as a marriage between people who are second cousins or more closely related. In clinical genetics , a consanguineous marriage is defined as a union between two individuals who are related as second cousins or closer , with the inbreeding coefficient (F) equal or higher than 0.0156 where F represents a measure of the proportion of loci at which the offspring of a consanguineous union is expected to inherit identical gene copies from both parents.²⁰

Though in India, in most geographical areas consanguineous

marriages are prohibited. But globally about 20% of the human population lives in communities with a preference for consanguineous marriages and that at least 8.5 % of children have consanguineous parents. Consanguinity is deeply rooted social trend among 1/5 of world population mostly residing in Middle East, west Asia, and North Africa as well as among emigrants from these countries.

Consanguinity is a marriage between relatives and has various degrees. Closely related individuals have a higher chance of carrying the same alleles than those less closely related and therefore children from consanguineous marriages are more frequently homozygous for various alleles than those of non consanguineous unions.²¹

The deleterious effect of consanguineous mating is high and predisposes offspring to the effect of recessively inherited disease. Consanguineous marriage is significantly higher in many genetic disease which suggests that couples may have deleterious lethal genes, inherited from common and when transmitted to their offspring's they can lead to parental, neonatal, child morbidity or mortality. This is principally due to the frequency with which recessive

genes exist over dominant genes within population. The offspring of consanguineous unions may be at increased risk to genetic disorders because of the expression of autosomal recessive gene mutations inherited from a common ancestor.

The closer the biological relationship between parents, the greater is the probability that their offspring will inherit identical copies of one or more detrimental recessive genes. Consanguineous marriages were highly significant in autosomal recessive diseases (78.8 consanguineous marriages were recorded among 51.5% of autosomal dominant diseases.

Consanguineous marriage attracts considerable attention as a causative factor in the prevalence of genetic disorders. Individuals born of consanguineous union have segments of their genomes that are homozygous as a result of inheriting identical ancestral genomic segments through both parents. These data imply that prolonged parental inbreeding has led to a back ground level of homozygosity increased ~ 5% over and above that predicted by simple models of consanguinity.

DISCUSSION

Ayurved suggest that mating of male and female should be *atulyagotriya*.

Though not so much of description is available in *samhita granthas*, it is very

important topic with social weightage. In various smruti *granthas* like *Manusmruti*, *yadnyavalksnruti* it is mentioned that mating of male and female should have different *gotras*.

Similarly modern science also describes the consanguineous marriages as the possible root cause of many genetic disorders. Marriages within the same *gotra* or family are a prime factor in genetic defects which have been passing on for generations and DNA are repeatedly getting destroyed.

Consanguinity and genetic non relatedness cannot be sharply distinguished from one another. There are many people descended from common ancestors who are unaware of the fact that they are related. In most geographical area man does not reproduce within pedigrees which are completely isolated from one another but rather in a network of relationships which joins all, or most strains together in a single reproductive unit. This is the case even where branches of a society seen to be separated. Over generation, prohibitions and barriers to intermarriages break down, particularly as both legitimate and illegitimate unions lead equally to interchange genes. That being the cause tracing of pedigrees of any group of apparently unrelated individuals of similar territorial origin will reveal that many of them possess a common ancestor.

Therefore if two such people, who are apparently unrelated, marry they do contract a distant consanguineous marriage. The term inbreeding and consanguinity are used interchangeably to describe unions between couples who share at least one common ancestor.

In mathematical terms consanguinity does not alter the allele frequencies of common disorders, but increases the probability of mating between two individual heterozygote for the same recessive mutant allele. In this regard, the risk of birth defects in the offspring of first cousin marriage is expected to increase sharply compared to non consanguinous marriage.

Scientists have blamed the above mentioned marriages within same *gotra* or family a prime factor in genetic defects which has been passing on for generations and DNA are repeatedly getting destroyed. So the preventive measure that all the people in the cities take is to examine the blood group and DNA profile to stop the passage of dangerous recessive genes in next generation.

So the question arises that how could ancient ayurved physicians who formulate this ritual of prohibition of marriage in similar *gotra* know that it would lead to problem in offspring without knowledge of genes and DNA? Or do they have a science for themselves which is

equal credibility as modern science? A parallel between the two can never be drawn as scientist have advanced tool to examine while in ancient age no such facilities were available as we understood? So it is safe to conclude that though ancient ayurved as well as dharmashastra

had some mechanism far advanced that they have today or will some still question whether the rituals followed by Hindus have no logical base.

CONCLUSION

1) Modern science also states the possibility of genetic disorders due to consanguineous marriages same as described in *ayurved garbha sharir* named as *atulyagotriya*.

2) We have to agree that what preventive measures scientists are suggesting now were already proposed in *ayurved* literature as well as *dharmashastra* and even in remote villages where scientific examination cannot be carried out due to lack of facilities *Atulyagotriya* is the only hope.

3) It should be considered for awareness program for prevention of genetic disorders and can be included in health awareness programs run by government.

4) Genetic counseling and public health education regarding consanguineous marriages and its effect on offspring are highly recommended in our community.

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