



Chungrung- mithun cattle hybrid: A Boon for Mishmi Tribes of Arunachal Pradesh

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ABSTRACT

Species hybridization between Mithun and Cattle is a form of outbreeding, to produce new offspring locally called as *Chungrung* by Digaru Mishmi, is a natural paradigmatic shift towards positive development of new breeds (Chungrung). Thereby, improving the low face value animal (cattle) to high face value animal (Chungrung), without much human manipulation against the desire of both the animals. However, there is a dilution in pure germplasm of both the species. Nevertheless, species hybridization is a boon for Mishmi society, because as per tradition and customary law and practices, Chungrung is considered at par with Mithun status in Mishmi society. Adult Mithun and Hybrid animal (Chungrung) cost around Rs 60,000 – 80,000, in counterpart adult cattle cost around 15,000 – 20,000 only. Consequently, Mithun and Chungrung is consider as most blessed animal for livelihood sustenance in many different dimension be it in social, culture or religious aspect of Mishmi society in Arunachal Pradesh.

1. Introduction

Mishmi tribes are inhabitant of Anjaw district of Arunachal Pradesh. Broadly, Mishmi's are divided into two community i.e Miju Mishmi and Digaru Mishmi, on the basis of dialect. However, their traditions and custom practices are almost similar. Mithun being most important animal in Mishmi society due to its multifunction face value, they often try to upgrade cattle into Chungrung (Hybrid) by species hybridization.

Interspecies hybridization is the most extreme form of outbreeding where two different species mate each other to produce new offspring with 50-50 blood percentage; genetic makeup and their phenotypic appearance resemble both the parents to some extent, Sastry and Thomas (2013). There are few records of species hybridized animal such as Cattalo (cattle cross buffalo). Hinny, (horse cross donkey). Zebroid, (zebra cross horse). Dzomos, (Yak cross cattle). Jatsa and Jatsamine (Mithun cross Siri cattle), Hickman and Tenzing (1982). Generally, in Arunachal Pradesh Mithun (*Bos frontalis*) and nondescript local cattle (*Bos indicus*) are reared

under zero input system, except for feeding salt during spotting or tracking the animals. They are left free to range and search for favourable environment for feeding, shelter and breeding ground *etc.* It is the character of Mithun to stay deeper inside the jungle for feeding and breeding purpose. Whereas, cattle graze near the periphery of forest without entry much deeper inside the forests. There are many animal in Anjaw district, which have similar phenotypic character of both Mithun and Cattle but no study have been done or documented in this aspect. Considering the above fact a field survey was done to reveal the facts.

2. Material and Methods

The present study was carried out at Anjaw District of Arunachal Pradesh in five villages, Hamaliang, Chirang, Chameliang, Supliang and Tafrialiang village of Hayuliang-Goilang CD Block in year 2015 to 2016. Randomly five persons were selected from each village comprising farmers, Gaonbura (village head) and rural youths as respondents. A uniform questionnaire was prepared to explore the facts about interspecies hybrid animal between Mithun and cattle in various aspects *viz.*

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breeding, differences in phenotypic appearance, social importance and overall perspective about interspecies hybridizations. Focus group discussion and field survey were also conducted for the same purpose.

3. Result and Discussion

3.1 Breeding method

The respondents informed that, under natural environments cross breeding takes place., However, they also practice purpose mating between these two species. They purposely bring their cattle near to Mithun for crossing during heat period or only female cattle are kept without any male cattle, so that male mithun will cross with cattle during favourable time. It was found that, female cattle with black coat colour breed more easily with mithun compare to other coloured cattle. Therefore, they prefer to keep black coat colour female cattle for interspecies hybridization purpose. The new interspecies hybrid offspring are locally called as Chungrung and as per the respondents within third generation of successive mating (Back crossing), with crossed female offspring by pure male Mithun or cattle result into full phenotype appearance of Mithun or cattle without knowing any blood percentage. It has been observed that, majority of Anjaw district are covered by steep physo-topography? due to which, Mithun remain in a close proximity with human dwelling area and come to road side for shelter during night, because of unfavourable place for resting, unlike other mithun inhabitant district of Arunachal Pradesh. As a result they share grazing land with cattle and often intermingling of two species occur and subsequently mating take place during. The karyotype of mithun consists of 58 chromosomes in comparison to 60 in domestic cattle (Gupta *et al.*, 1995). It has been reported that, among hybrid offspring of mithun and

European cattle, females are generally fertile and males are sterile. It was reported by Kuhn in 1885 as quoted by Simoons and Simoons (1968) and Winter *et al.* (1984). However, as per our survey, both the sexes of Chungrung remains fertile, which is contrary to the above findings. This may be due to that, the cattle used for cross breeding by Kuhn 1885 was of European breed (Bos Taurus). There is no available literature on Indian cattle (Bos Indicus) cross with mithun. Therefore, there is need of in-depth study in sperm quality of male Chungrung to reveal the facts.

3.2 Physical character

Female Mithun cross with male cattle resemble more like Mithun in phenotypic appearance (Figure 1). Whereas, Male Mithun crossed with female cattle resemble more like cattle (Figure. 2). However there is 50-50 blood % and genetic makeup from both the parent in the hybrid offspring.. Pure breed mithun have white stocking leg irrespective of body coat colour, with tail not extending beyond hock joint. However, in Chaungrung legs are of different coat colour *viz.* white, black or admix of white and black and tail may or may not extending beyond the hock joint, while in cattle tail length extend beyond hock joint. The horns of chungrung are very glossy, sharp pointed and thin compared to Mithun (Figure. 3). The physical characteristic difference between Mithun, Cattle and Chungrung are shown in Figure. 4 and Table No.1.

3.3 Social Importance

Mithun are consider as most blessed animal in Mishmi society and they are used for bridal price (Marriage gift to girl father) during marriage ceremony, as a sacred animal for scarification (offer to God) in rituals performance, due to which value of mithun is sky rocking (Very costly). Similarly role of mithun in socio-economic and cultural life

Table No 1.Physical characteristic difference between Mithun, Cattle and Chungrung

Sl. No	Particular	Mithun	Cattle	Chungrung
1	Horn feature	Broad base with tapering end	Parallel base with tapering end	Admix
2	Frontal skull	Long	Short	Medium
3	Shank colour (leg)	White stocking	No white stocking	May or may not white stocking
4	Tail length	Not extending beyond hock joint	Extend beyond hock joint	May or may not extend beyond hock joint
5	Spineous process (lumber)	Very prominent	Not prominent	Medium
6	Horn ring	Very prominent	Not prominent	Less prominent
7	Horn colour	Yellow, black, admix	Black	Yellow, black, admix
8	Horn texture	Smooth	Rough	Very shiny and smooth with sharp pointed tips
9	Body structure	Huge	Small	Medium
10	Bone size	Thick	Thin	Medium

of the tribal people are mentioned earlier (Simoons 1984, Mondal and Pal 1999, Tayo *et al.*,2014). The new interspecies hybrid offspring locally called as Chungrung are used as same face value of Mithun in Mishimi society like two different facet of same coin. Therefore, they never distinguish mithun and chungrung, in traditional and customary practices.

3.4 Overall perspectives about hybrid offspring

As per the respondents, outbreak of FMD is very common in Mithun and cattle population and Thelazia infestation is also very common in Mithun but rarely occur in cattle population in Anjaw. However, hybrid offspring (Chungrung) are less susceptible to FMD and eye worm infestation by Thelazia, compared to Mithun and cattle. Hybrid offspring are very hardy, every year one calf is calved, and calf mortality percentage is very low with shorter inter calving period compare to Mithun. Chungrung also possess very good mother instinct and protective in nature So, most of respondents view is that they prefer to rear Chungrung because of hardy in nature, disease resistance and one calf every year and face value is same with Mithun. However, they would like to maintain pure germplasm of Mithun for their descendant as maintained earlier.



Source: KVK Anjaw, field survey 2015-16

Figure 1. Female cattle cross with Male Mithun



Source: KVK Anjaw, field survey 2015-16

Figure3. Comparative phenotypic physical character between Chungrung and Mithun



Source: KVK Anjaw, field survey 2015-16

Figure 2. Female mithun cross with Male cattle (Offspring resemble more with Cattle)

Conclusion

Intentionally by forceful outcrossing of different animal may be against the ethics of Hardy Weingber law and Darwin theory of natural selection but in Anjaw District, according to the Physic-topography of district the outbreeding is done as per the theory of natural selection between two different species though they come under same Bovidae family. No doubt, there is a dilution of germplasm in pure breed Mithun and cattle populations. However, it is a boon for Mishimi society by upgrading low face value (Cattle) to high face value animal (Chungrung), comparable to status of Mithun. The interspecies hybrid offspring between mithun and cattle are known by different name in different district of Arunachal Pradesh. Jatsa and Jatsam by West Kaming district of Monpa tribes, Tamin by people of Mechuka and Tutin, Sesabee by people of Sagale and Chungrung by Mishmi tribes. Therefore, interspecies hybrid offspring must be given a common name as Mithle (Mithun and cattle), for easy reference, as common name for cattle cross buffalo is called Cattalo.

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Figure a.Mithun



Figure b. Cattle



Figure c.Chungrung



Figure d. Jatsa (Male) & Jatsam (Female)

Source: KVK Anjaw, field survey 2015-16

Figure 4. Physical character difference between four breeds

Reference

- Gupta N, Verma ND, Gupta S C, Kumar P, and R Sahai (1995). Chromosomes of Mithun (*Bos frontalis*). *Indian j anim sci* 65(6)
- Hickman CG, and D Tenzing (1982b). The classical crossbreeding system in Bhutan. *Bhutan J Anim Husb.* 5: 23-27.
- Mondal SK, and DT Pal (1999). Mithun: Historical perspective. *Asian Agri-History* 3(4) 245-260.
- Sastry NSR, and Thomas C.K (2013). Livestock production management, fourth revised edition 2005. Page 136-137.
- Simoons FJ (1984). Gayal or Mithun. In Evolution of domesticated animals. Editor: Mason, I L. Longman, London, UK pp 34.
- Simoons FJ, and ES Simoons (1968). A Ceremonial Ox of India. The Mithun in nature, culture, and history. The University of Wisconsin Press, Madison. pp 322.
- Tayo T, Tadang M, Taba H, Neeta L, Vivekananda S, and T Tilling (2014). Assessment on Mithun, Jhum and their Interrelationship in Tribal Inhabitant Area. *Advances in Animal and Veterinary Sciences.* 2(1): 15 – 19
- Winter H, Mayr B, Schleger W, Dworak E, Krutzler J, and B Burger (1984). Karyotyping, red blood cell and haemoglobin typing of the *Mithun*(*Bos frontalis*), its wild ancestor and its hybrids. *Research in Veterinary Science* 36: 276-283.