ISSN : 0974 - 7435 Volume 10 Issue 6

BioTechnology
An Indian Journal

FULL PAPER

BTAIJ, 10(6), 2014 [1382-1383]

Linkage of goat fecundity with the loci *BMPR-IB* and *BMP15*

G.Zaman[1]*, G.Khaogria[1], Rupam Dutta[1], M.Chandra Shekar[1], Parikh Rakesh[2]

[1]Department of Animal Genetics and Breeding, College of Veterinary Science, Khanapara, Guwahati-781022, Assam, (INDIA)

[2]Department of Animal Genetics and Breeding, College of Veterinary Science and Animal Husbandry, Anand Agricultural University, Anand -388001, Gujarat, (INDIA)

E-mail: gzaman60@gmail.com; gautkhar74@yahoo.com; drrupamdutta@gmail.com; chandu.avi@gmail.com; drrakesh81@rediffmail.com

INTRODUCTION

One of the good economic sources of meat in developing countries is goat as it utilizes poor quality grass and crop residues. The Assam Local goat (ALG) is one of the most productive, non-descript population of goats in northeastern India. This population found in Plain areas of Assam (Brahmaputra valley), small in size and colour varies white, black and brown etc. It's a meat purpose goat which can be serving in harsh climatic conditions of this region and with zero percent of management. The efficiency of kids production and goat meat can be increase by the improving of reproductive efficiency of this goat herds. The gene responsible for the prolificacy in sheep is Booroola (or FecB) gene[3]. So, the identification of the gene responsible for the prolificacy in goat is important for the goat industry. Therefore, the objective of the present study is to conform that whether the same loci *BMPR-IB* and *BMP15* is linked for fecundity in goat as in sheep.

MATERIALS AND METHODS

Jugular blood samples (6 ml) were randomly collected from genetically unrelated animals from plains of Assam (Brahmaputra Valley) using EDTA coated tubes, immediately placed on ice and transported to the laboratory in a thermos flask. Caprine genomic DNA was isolated from whole blood samples by using standard phenol-chloroform method (Sambrook *et al*., 1989) with few modifications when required. Isolated DNA samples were assessed for its quality and quantity by spectrophotometric measurement. PCR was carried out using a modification of the forced RFLP method[1]. The primer has been engineered to introduce a point mutation resulting in PCR products with *FecB* mutation containing an *Ava*II restriction site (G/GACC), whereas products from non-carriers lacking this site. Recovery and purity of each DNA sample was estimated by UV spectrophotometery. Separation and purification of DNA fragments were done by agarose gel electrophoresis.

RESULTS AND DISCUSSION

All 12 PCR products were subjected to direct DNA sequencing and sequences obtained were aligned with reference sequence available at NCBI (Acc no. JN049449). No nucleotide variations were found in any of the sequence and there were no restriction site for *AvaII* enzyme. These results suggest that fecundity of goat is not linked to the same loci in *BMPR-IB* and *BMP15* as sheep (Figure 1). In conclusion, this

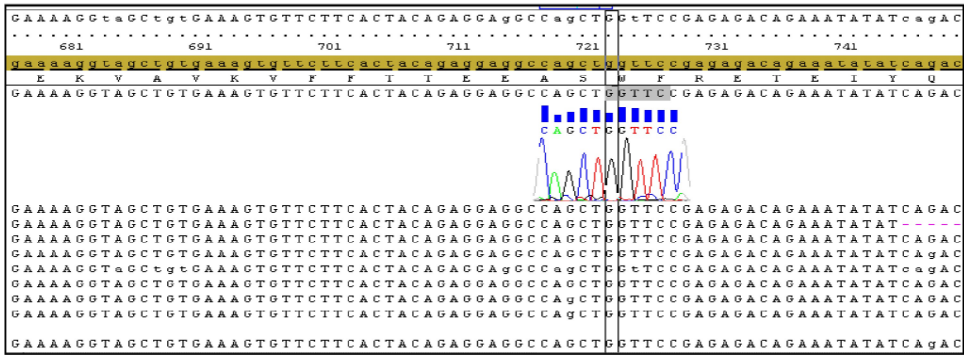

Figure 1: Assam Local goat sequences and their alignment with reference sequence

study revealed the fact that it is necessary to seek for other genes or loci in order to develop marker assistance selection techniques and study the prolific mechanism of the goat.

REFERENCES

[1] G.H.Davis, S.M.Galloway, I.K.Ross, S.M.Gregan, J.Ward, B.V.Nimbkar, P.M.Ghalsasi, C.Nimbkar, G.D.Gray, Inounu.I.Subandriyo, B.Tiesnamurti, E.Martyniuk, E.Eythorsdottir, P.Mulsant, F.Lecerf, J.P.Hanrahan, G.E.Bradford, T.Wilson; DNA tests in prolific sheep from eight countries provide new evidence on origin of the Booroola (*FecB*) mutation. Biol.Reprod., **66**, 1869–1874 **(2002)**.

[2] Guo-Hua Hua, Shi-Lin Chen, Jun-Tao Ai, Li-Guo Yang; None of polymorphism of ovine fecundity major genesFecB andFecX was tested in goat Animal Reproduction Science., **108(3–4)**, 279–286 **(2008)**.

[3] L.R.Piper, B.M.Bindon; The Booroola Merino. In: M.H.Fahmy, (Ed); Prolific Sheep. Agriculture and Agri-Food Canada, Lennoxville, Quebec, Canada, 152-160 **(1996)**.

[4] J.Sambrook, E.F.Fristisch, T.Maniatis; Molecular Cloning: A Laboratory Manual, 2nd edition, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, USA, **(1989)**.