

THERAPEUTICS OF IMMUNOMODULATORY APPROACH FOR TREATMENT OF INFERTILITY IN BOVINES-A DETAILED REVIEW

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Abstract:-

Infertility in bovines had been a major cause of concern for the dairy/beef farmer. In order to produce a calf per year, the reproductive management has to be in synchrony with the common managerial practices in the farm and hence requires the latest reproductive management tools to aid such thing. With increased inflation in the food commodities and particularly in prices of FMCG, every liter of milk owe lot of economic value to the farmer, hence optimum reproduction followed by production is the need of the hour in developing countries. Hence reproductive management with advanced reproductive tools has gained lot of importance in the recent past. Infertility is the major reproductive threat posing severe economic losses to the farmers' livelihood. One of the major causes of infertility is sub-clinical, retrograde uterine infections. Several antibiotics have been tried by different scientists with varying results. Recent approach warrants the use of immunomodulator therapy, clearing infection, increasing uterine tone, avoiding antibiotic resistance and residues, and hence acting as the most effective and economic approach in augmenting fertility. The present paper deals with a review of the immunomodulators used for treating infertility and the latest developments and new concepts in immunomodulatory treatments.

Introduction

“Production follows reproduction” has relevance only when there is optimal reproduction in animal husbandry. A normal uterus and particularly a normal endometrium is one of the important components of fertility. Endometritis, metritis, repeat breeding syndrome and RFM are major causes for infertility in cattle and buffaloes. In present times, treatment of infertility is mainly done by intrauterine antibiotics, antiseptics and less commonly by hormones.

The inconsistent results, high cost of treatment, compulsory milk disposal and inhibition of natural uterine defense after antibiotic/antiseptic treatment made it uneconomical (Hussain and Daniel, 1992). Indiscriminate use of antimicrobial agents to treat uterine infections has invariably resulted in emergence of resistant bacterial strains (Arora *et al.*, 2000). Besides this, intrauterine treatments result in some absorption of drug, adulteration of meat and milk and bacterial resistance that leads to other complications. Hence, the role of immune system in the control of uterine infections in farm animals is attracting attention of researchers in recent times. Chemotaxis of polymorphonuclear cells (PMNs) into the uterus, as well as selective modification of functions of PMNs is clinically advantageous. Hence, at present various immunomodulators such as LPS (Endotoxin), Oyster glycogen, Autologous plasma/serum, levamisole and herbal drugs have been tried as alternative to conventional treatment which act non specifically to up regulate the uterine defense mechanism (UDM) to cure uterine infection (Dhaliwal *et al.*, 2001; Singh *et al.*, 2003 and Sahadev, 2005).

Prevalence economic consequences of infertility

Genital infection is a major cause of infertility with an incidence upto 56.6% in crossbred cows (Rao and Kotayya, 1976; Singh *et al.*, 1989 and Maurya *et al.*, 1992). Uterine infection, mainly of bacterial origin constitutes a major cause of repeat breeding and endometritis especially in dairy animals in developing countries like India (Maurya *et al.*, 1992 and Saini, 1993). Higher incidence of endometritis has been reported in buffaloes than cows (Dobson and Kamonpatana, 2000).

It is presumed that majority of cattle and buffaloes (18-40%) are culled and reach to slaughterhouse primarily due to infertility. Infertility results in delayed conception or longer inter-calving period, reduced milk yield and thus reduces the economy of the dairy industry.

Asdell, (1955) estimated that at any time 10% of cows experiencing breeding trouble and Gracey, (1960) quoted a similar figure of 5.2%. Bozworth *et al.* (1972) stated that 22% cows were culled due to infertility, Xu & Burton, (2000) stated 13.6% and Le Blanc *et al.* (2002) stated 16.9% culling rate of cows due to infertility. Lauderdale, (1964) found that 2 month extension in calving interval resulted in loss of 144Kg milk & 0.15 calves/cow. Pecsok *et al.* (1994) suggested that a 1% increase in conception rate was worth up to \$7.36 per cow per year. (Arthur, 2001.)

Jeyakumari *et al.* (2003) has revealed the annual losses incurred as a result of endometritis / metritis ranged between Rs. 2902.32 to Rs. 3101.70 per animal under Indian condition.

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