Brucellosis is still one of the most important zoonotic diseases, leading to huge economic losses to dairy farmers and is a major health hazard in India. These loss results through abortion, infertility, stillbirth in animals and reduction in milk yield. In human beings it causes undulant fever and they get infection from animals through direct contact with aborted fetus, placenta, uterine discharges and consumption of contaminated milk and milk products. In India it is largely an occupational disease involving veterinarians, dairymen, livestock producers, butchers and lab workers. In the present study an epidemiological survey was done to study seroprevalence and patterns of occurrence of brucellosis in dairy animals, veterinarians and animal handler in Punjab State of India.

Materials and Methods:
To study seroprevalence serum samples of 2560 dairy animals (cows, buffaloes and goats), 790 serum samples of veterinarians and 189 of animal handlers from various districts were analyzed in this department. Serum samples were screened for Brucella agglutinins using various serological tests as Rose Bengal Plate Agglutination Test (RBPT), Plate Agglutination Test (PAT), Standard Tube Agglutination Test (STAT), Compliment Fixation Test (CFT) as described by Public Health Monograph No.74 (1965) of US Public Services and by DOT ELISA. Data was collected and analyzed from organized farms from year 1988 onwards to see effect of Brucella abortus Strain 19 calfhood vaccination on incidence of abortion rate.

Results and Discussion:
The overall prevalence of brucellosis was found to be 11.80% in cattle, 10.67% in buffaloes and 3.60% in goat. Analysis of data revealed rise in prevalence of brucellosis in dairy animals during 1990-99. Whereas in eighties, average prevalence was 9.1%, during seventies it was 6.4 %. Various workers, Joshi and Parkash (1971)\(^1\) Kulshreshtha et al. (1978)\(^2\), Chatterjee et al. (1986)\(^3\), Suresh et al. (1993)\(^4\) reported incidence of brucellosis from 3.5 to 10.6%.

None of screening test was 100% accurate to detect every positive animal correctly. The results of five screening tests RBPT, PAT, STAT, CFT and Dot-ELISA were
compared. The agreement between various serological tests was 70% and 68.5% in vaccinated and nonvaccinated cattle, respectively. In case of vaccinated and nonvaccinated buffaloes the agreement was 78.6% and 78.5% respectively.

The role of possible factors such as livestock migration, density of animal population, vaccination program, non-slaughter policy, health cover, management practices and insemination methods that influence disease patterns and occurrence of brucellosis was studied. Among animals with history of abortion, 38.6% were positive for brucellosis whereas 4.2% positive animals have no history of abortion. The studies on distribution of brucellosis revealed that prevalence was higher i.e. 15.8% in large dairy farms as compared to 5.4% in small and marginal dairy farms. Prevalence of disease was quite less (2.1%) in some private organized farms because of good management practices followed such as good sanitation, proper disposal of placenta, disinfection, quarantine practices, better overall animal health awareness and routine testing of bulls used as breeding stocks. These organized farms had better contacts with extension agencies and on all these accounts unorganized farms were at a disadvantage. Joshi et al. (1975) also reported very low prevalence of brucellosis in organized dairy farms.

Analysis of data collected from organized farms where Brucella abortus Strain 19 calfhood vaccination program was carried out revealed that there was gradual decline in abortion rate from 7.96% to 0.93% in cows and 2.53% to 0.68% in buffaloes in last decade. The overall abortion rate in vaccinated cattle was 4.05% and in vaccinated buffalo it was 1.55%.

Migration of animals greatly influenced the prevalence of brucellosis. In about 76% dairy farms where brucellosis was reported there was history of recent addition of animals purchased from cattle market as against only 6% farms which kept only home bred or farm raised animals.

Prevalence of brucellosis was directly proportional to the density of animal population as in urban dairy complexes where most of dairies were concentrated as per the directions of State Govt. The prevalence was as high as 29% in such dairy farms.

Because of strong religious feeling against slaughter of cattle in India, the dairy farmers had little choice to cull the diseased animals through slaughter. Such animals were potential source of infection to healthy animals because of their frequent sales in cattle markets which is the easiest way of disposal of infected animals for dairy farmers. In this manner, animal movement from cattle markets to new farms contributed to rising incidence of brucellosis.

The high prevalence of brucellosis in dairy animals was assuming alarming public health significance and had shown significant effect on veterinarians and animal handlers. Serum samples of 790 veterinarians and 198 animal handlers of Punjab State were screened for Brucella agglutinins of which 258 (26.11%) individuals had
Brucella agglutinins and 215 (21.76%) had diagnostic titers. Various workers had also reported high incidence of brucellosis in veterinarians. (Gilbert et al., 1980; Rahman et al., 1983; Aboshehada et al, 1991 and El-Gohary and Hattab, 1992). Out of total 258 individuals who had Brucella agglutinins 123 (47.6%) had symptoms of brucellosis ranging from intermittent fever, backache, joint pain, arthritis, night chills, anorexia and orchitis. All the infected persons gave good response to treatment with combination of broad-spectrum antibiotics as suggested by W.H.O. resulting in decreased titre of Brucella agglutinins.

Reference