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1.1 Individual milk samples were typed for the milk proteins, Alpha 1 casein, Beta casein, Gamma casein, Alpha lactalbumin and Beta lactoglobulin. The samples comprised 169 from Holstein, 154 from Jersey, 38 from Red, 38 from Brown Swiss and 263 from other breeds. All were typed at the National Dairy Research Institute, Karnal.

1.2 Three types of Alpha 1 casein were identified as A, B and C. Among Alpha 2 casein, Gamma casein, Alpha lactalbumin and Beta lactoglobulin, different phenotypes occurred as A, B and C. A was prevalent with normal electrophoretic procedures. The genetic control of each protein type were calculated at their percentage frequencies have been graphically represented.

In Holstein and Brown Swiss both Alpha 1 casein A and C were always present, though C was more common. Among Alpha 2 casein B was totally absent. Other distributions were observed on the average estimates of one of the electrophores studied. These facts indicated that the two breeds might be in many or they were very closely related.
calculated. Estimations were repeated for three seasons.

2.2 In order to obviate the effects of seasons, stages of lactation and pH on the above characters, analyses were made using the least square technique. Since the object of the study was to estimate the effects of protein types on characters of physico-chemical and economic importance, they were included in the analyses. The analyses were made for all breeds pooled together and grouped breed-wise and also by pooling groupwise and sorting breeds within protein groups.

2.3 Average values of heat stability and curd tension of milk were calculated for each breed and they have been represented graphically. The highest heat stability and curd tension of milk of Tharparkar cows confirms its breed identity as compared to Sahiwal and Red Sindhi breeds which were shown to be identical in breed qualities.

2.4 Curd tension was not found to be related to any protein polymorphism in any breed. The heat stability was significantly ($P<0.05$) influenced by Alpha lactalbumin polymorphism ($AA > AB = BB$) in case of Sahiwal, Alpha $\epsilon_1$ casein in Tharparkar ($BB > BC = CC$), and Beta lactoglobulin types both in Sahiwal ($AA > AB = BB$) and in Red Sindhi ($AA = BB > AB$). Beta casein polymorphism was
found to influence heat stability \((A^A > B^B > a^b)\) significantly \((P < 0.05)\) when data from all breeds were pooled together.

2.5 Heritability estimates were calculated both for heat stability and curd tension of milk in different breeds, including Murrah buffaloes. Genetic and phenotypic correlations along with standard errors \((S.E)\) were estimated using half sib method for the adjusted data. Heritability estimates in different breeds of cattle and in Murrah buffaloes varied from zero to one and were considered to be non-significant. Phenotypic and genetic correlations between these two traits were also not significant statistically.

3. The influences of milk protein types on some of the economic characters like age at first calving, first calving interval and first lactation yield for the five breeds were analysed. Averages of each character were tabulated for different breeds and graphically represented.

The differences between Beta lactoglobulin types were significant both for the age at first calving \((A^A = AA > B^B)\) and the first lactation yield \((A^A = AA > b^B)\) in Tharparkar. Age at first calving was significantly influenced by Beta lactoglobulin types in Red Sindhi
cows (AA > AB > BB) and by Alpha S₁ casein types in cross
bred cows (BB > BC = CC). In Tharparkar the effects due
to Kappa casein types were significantly different
(AA > AB = BB) for the estimates of first calving inter-
val.

4. Seasonal effects were significant in all breeds of
cattle for curd tension and only in Tharparkar and
Sahiwal breeds for heat stability. Significantly
higher values of curd tension were observed during
winter whereas higher values of heat stability were
seen during summer and monsoon seasons as compared
to those of winter. Lactational stages had significant
influence on heat stability in Cross bred cows and on curd
tension in Murrah buffaloes. Higher values for heat
stability were observed during the first two stages of
lactation whereas Murrah buffaloes showed higher curd
tension during the last two stages of lactation. These
findings are of considerable importance in the proce-
ssing of milk and milk products.