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SUMMARY AND CONCLUSION

The present part was planned to contain two sections representing milk protein products prepared from buffalo's milk during summer and winter. The summer milk (SM) and winter milk (WM) samples were from the herd bulk milk.

In section (A), acid casein (AC), co-precipitate (Co-ppt) and soluble lactoprotein (SLP) were prepared and analysed for chemical composition and some functional properties. The attained results can be summarized in the following:

1- AC prepared from SM or WM had protein content as 85.74 % and 86.15 %, whereas the values of TS were 89.89 and 89.95 % and of ash were 1.65 and 1.99 % respectively. Co-pp has protein as 85.56 and 87.03 %, TS as 89.86 and 90.89 % and ash content as 1.74 and 1.99 % respectively. The corresponding protein content of SLP were 86.06 and 87.17 %, TS content were 90.19 and 91.16 % and ash content were 1.86 and 1.89 % respectively. Such differences in the components due to season of the year were insignificant.

2-casein from SM was very rich from the amino acids Asp, Glu and Leu, whereas casein from WM was very rich with the amino acids Arg, Pro, Tyr, Met and Phe, Co-ppt from SM was rich from the amino acids Glu, Thr, Tyr, Cys, Leu and Lys whereas the WM product was rich with the same prementioned amino acids also and it may be of interest to note that the values of the different amino acids were comparable when SLP was manufactured from SM or WM.

3-Solubility of AC prepared from SM or WM had the values of 6.41 and 6.45% respectively when solubility was determined at pH 5 without soaking and the values were 28.72 and 28.76% with soaking. The corresponding values at pH 7 were 18.36, 18.52, 53.97 and 54.56% respectively. Co-pp had the values of 6.67, 6.66, 31.01 and 31.05% at pH 5 and values of 18.98, 18.81, 56.74 and 57.17% at pH 7 when the product was prepared from SM or WM without and with soaking respectively. SLP prepared from SM or WM at pH 5 had solubility values of 6.99 and 7.2% and the values were 30.53 and 31.32% with soaking. The corresponding values at pH 7 were 18.81, 18.88, 57.55 and 58.92% respectively.

4-Sorption of water (%) of AC prepared from SM or WM had the values of 21.96 and 23.59 in order and the values increased to 28.64 and 30.09 when time was increased from 24 to 48 h. The corresponding values for Co-pp were 22.95 and 24.4 for SM and WM in order and increased to 30.48 and 31.84 at 48 h. SLP had the values of 23.18 and 24.54 for SM and WM after 24h and 30.18 and 32.12 after 48 h respectively.

5-At pH 5.5, AC from SM had the values (m^2/g) of 95.26, 75.93, 65.96, 43.63 and 32 after zero, 24, 48, 72 and 96 h respectively for emulsifying capacity and stability. The corresponding values for AC from WM were 97.88, 77.06, 66.99, 44.99 and 32.32 respectively. At pH 7 the values greatly increased to be 129.92, 100.63, 88.06, 69.32 and 53.66 in AC from SM and 132.21, 102.52, 92.06, 73.64 and 54.29 from WM respectively. The corresponding values given for Co-pp were 106.06, 83.76, 70.82, 51.16 and 32.89 in case of SM and pH 5.5 and were 107.38, 86.71, 70.37, 54.77 and 35.8 for WM at the same pH respectively. Increased the pH to 7 increased the value to be 135.09,

107.84, 92.24, 85.76 and 68.98 in SM and to be 136.79, 110.92, 93.38, 84.49 and 69.73 in WM respectively. The corresponding values given for SLP were 105.89, 89.77, 71.13, 51.84 and 37.3 in case of SM and pH 5.5 and were 109.03, 91.01, 72.7, 55.97 and 38.73 for WM at the same pH respectively. Increased the pH to 7 increases the valued to be 137.02, 112.15, 92.28, 83.36 and 68.60 in SM and to be 137.59, 113.01, 93, 84.88 and 69.71 in WM respectively .

6-The values of foaming capacity (%) at pH 5.5 and after whipping time of 5, 10, 15, 20 and 30 min were 30.33, 50, 45, 53 and 59 for AC prepared from SM and were 32.33, 49, 54, 52.67 and 60.33 in case of WM respectively. The corresponding values (%) at pH 7 were 60, 94.6, 98.67, 95.33 and 105 for AC prepared from SM and were 62.76, 93.67, 99.33, 96 and 105.33 in case of WM AC respectively. The Co-pp at pH 5.5 and after 5, 10, 15, 20 and 30 min had the values of 34.33, 56, 67, 66 and 81 in case of using SM and 35, 57.67, 67.33, 66 and 81.66 in WM respectively. At pH 7, the corresponding values were 70, 102, 110.67, 108.33 and 134 and were 70.33, 102, 111.33, 109.33 and 134.33 in WM respectively . The SLP at pH 5.5 and after 5, 10, 15, 20 and 30 min had the values of 38.33, 59, 69, 65.67 and 80.33 in case of using SM and 39.33, 61, 68.33, 66.33 and 81.33 in WM respectively. At pH 7, the corresponding values were 73.67, 107, 67, 112.67, 107.33 and 144.67 and were 75.66, 107, 111.33, 109 and 146 in WM respectively .

In conclusion composition, solubility, sorption of water, emulsifying capacity and stability and foaming properties of AS, Co-pp and SLP were not affected by season of the year, since the differences in this respect due to using SM or WM were insignificant.

whereas pH and calcium content had significant effect on increasing and decreasing this capacity respectively.