

A-13: Are buffaloes better protected against mammary infections than cattle?

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This work describes the phagocytic efficiency of neutrophils which are the most active phagocyte in the body. Phagocytic activity is an important defense mechanism against mammary infections. Since blood neutrophils migrate to mammary tissue to destroy invading pathogens during an infection, neutrophils isolated from blood and milk of buffaloes were allowed to interact with mastitis causing bacteria. The phagocytic efficiency of neutrophils isolated from blood was highest for *Staphylococcus aureus* (86%), followed by similar activity for *Streptococcus agalactiae* (77%) and *Escherichia coli* (74%). Out of a somatic cell count of 140,000/ml (50,000-375,000/ml) in normal buffalo milk, 56% (22-88%) were neutrophils. Experimental induction of aseptic mastitis resulted in a high cell count

in milk ($65 \times 10^6/\text{ml}$) and 90%(86-95%) of those cells were neutrophils. The phagocytic efficiency of milk neutrophils was also highest for *Staphylococcus aureus* (83%) followed by similar activity for *Streptococcus agalactiae* (65%) and *Escherichia coli* (66%). In a previous study on cattle the percent phagocytosis of blood neutrophils was highest for *Escherichia coli* (81%), followed by *Streptococcus agalactiae* (77%) and *Staphylococcus aureus* (64%). Accordingly, the phagocytic activity of buffalo blood neutrophils was 22.5% higher for *Staphylococcus aureus* and 7.8% lower for *Escherichia coli* while similar for *Streptococcus agalactiae*. Normal cattle milk contains up to 500,000 somatic cells /ml with a neutrophil concentration less than in normal buffalo milk (26-29%). Cattle milk neutrophils are known to have a significantly reduced phagocytic activity for *Staphylococcus aureus* when compared with their blood counterpart. These findings explain the reported observation that buffaloes are more resistant to mastitis caused by *Staphylococcus aureus* than cattle.

Financial assistance by Swedish Agency for Research Co-operation (SAREC) through NARESA for research grant BF-30 is acknowledged.