Defining acceptable milk quality at time of milking

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It is an important criterion that milk for consumption is produced by healthy cows. The milker has the possibility (and obligation) of observing the cow and the foremilk before attachment of a conventional milking unit. Milk from cows with abnormal foremilk can be identified and withheld from delivery. Clinical mastitis, blood, and colostrum are the abnormalities being looked for. In principle, automatic milking systems have the same opportunities to test the milk but sorting of milk requires an exact definition of what is normal and acceptable and what is unacceptable for human consumption. So far, definitions of acceptable milk quality in relation to blood, colostrum, or clinical and subclinical mastitis have not been set. These definitions are needed in order to develop sensors capable of precisely detecting and discarding unacceptable milk. Current automatic detection systems are mainly based on measurement of conductivity, but this method is not precise enough to sort milk. Measurement of SCC of composite milk only and discarding milk above certain thresholds will not ensure that milk from all cows with clinically abnormal foremilk is withheld from delivery. Low thresholds of SCC will reduce the frequency of cows with abnormal milk but increase the discarding of milk from cows with visually normal foremilk. Low SCC threshold on the quarter basis will ensure that abnormal milk is withheld from delivery but also cause large amounts of milk to be dumped.
A test panel of 15 persons did not fully agree on the scoring of dishes with normal and abnormal milk. Milk samples that most of the test panel scored as having clots had high SCC's. It is not possible to differentiate between high and low SCC milk samples just by visual appearance. The test panel scored dishes 4 at a time with different percentages of blood and was able to detect milk samples with 0.1% blood. Milk samples with 0.4% or more blood all was scored as pink and samples with 0.1% blood could be visually detected if they were compared with milk samples without blood.

It is concluded that dumping of clinically abnormal milk at the time of milking should be based on properties directly related to the homogeneity of the (fore)milk. Indirect measurements of SCC in quarter or composite milk do not ensure that all abnormal milk is discarded. Colour scanning of milk is a useful tool in order to avoid blood and colostrum contamination of the milk and shows promising results to detect clinical mastitis as well.