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Quality of colostrum as estimated by different methods

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Colostrum is initial secretion produced in mammary glands of mammals following parturition. Colostrum is rich in immunoglobulins, lactoferrin, growth factors and many other biologically active substances. Quality of colostrum is important for new-borns, which have immature immune system, moreover colostrum is also widely used as food supplement. The main quality marker of colostrum is concentration of immunoglobulins, in the broad sense content of proteins. The standard method for estimation of immunoglobulin IgG1 is radial immunodiffusion (RID), but this method is lenghty and expensive. Thirty samples of spray dried or lyophilized cow colostrum were analysed by several methods, both rapid screening methods and more precise methods. Measurement of refraction index is rapid and simple method, but correlation with RID is quite week (below 0.8). Three chromatographic methods were tested: size exclusion chromatography (SEC), affinity chromatography (AC) and reverse phase chromatography. Good results were obtained from SEC (R2=0.95), but column is very expensive and it has short lifetime. Similar results gave affinity chromatography, its advantage is short analysis time (8 min). Spectrophotometric methods (Bradford and UV spectroscopy) are not demanding for instrumentation, but the sample preparation is quite complex.

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