

**Cell-based models to test bioactivity of milk-derived bioactives**

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The life science industries have a strong interest in screening for novel bioactives in complex mixtures like milk and dairy products. Food bioactives are not only important for public health in general, but also have potential therapeutic applications for the treatment of a number of diseases. To identify these novel bioactives, establishment of robust screening assays is essential. The use of *in vitro* cell-based models for screening and testing have the advantage, that several concentrations of mixtures or specific compounds can be assayed at the same time in cells from specific tissues. Primary cell cultures from target organs or established cell lines can be used to identify the most sensitive cells. In addition, a large number of transfected cell lines with very specific sensitivities have been developed. Different endpoints inherent to basal or more sophisticated cellular functions can be investigated, such as cell viability, apoptosis, migration, intracellular signalling, regulation of gene expression, morphology and metabolic alterations. The gastrointestinal tract is an obvious target for bioactive molecules delivered through milk and dairy products, because it lies at the interface between dietary components in the lumen and the internal processes of the host. Identification of bioactive factors that affect proliferation or migration of epithelial cells may have potential applications in promoting gastrointestinal health in both humans and animals. The mammary gland is another target organ of considerable interest in relation to milk bioactives since it has been estimated that dietary factors contribute to the etiology of 30-50% of all breast cancers. A large number of gastrointestinal and mammary epithelial cell lines are commercially available, but in order to study some cellular functions, primary cultures of freshly isolated cells are often preferred, since established cell lines do not always express specialised properties in culture.