Foreword

During the last two decades, increasing research interest has been paid to identifying dietary components that have a measurable impact on human biology. Within this framework, the term '*bioactivity*' has arisen as a loose definition encompassing '*food components that can affect biological processes or substrates and hence have an impact on body function or condition and ultimately health*'.

While it may be argued that any dietary component, consumed in great enough quantity, will be likely to impart a biological effect of *some* description, the definition of bioactivity is usually refined by two caveats:

(1) That for a dietary component to be considered 'bioactive' it should impart a measurable biological effect at a physiologically realistic level;
(2) That the 'bioactivity' being measured has the potential (at least) to affect health in a beneficial way, thus excluding from this definition potentially damaging effects (such as toxicity, allergenicity and mutagenicity, which are undoubtedly a reflection of 'bioactivity' in its broadest sense).

The range of physiological processes that can be affected by dietary bioactivity is vast, and includes functions related to digestion, nutrient absorption and post-prandial synthesis; mineral uptake and assimilation; the functioning of the intestinal microflora; hepatic and pancreatic turnover; and effects on the brain, cardiovascular and immune defence systems. The challenge to the practical researcher is to identify what food components constitute bioactivity, and to determine whether these influences are sufficient to affect health.

Bovine colostrum and milk represents a unique source of bioactive substances from a major dietary constituent. Human studies have clearly identified maternal milk as a biologically active fluid, and the degree of sequence homology between bovine and human proteins at least suggests that many bioactive substances in bovine milk should have the potential, at least, to impact on human physiology. Indeed, over the last two decades, an increasing body of scientific evidence has accumulated to indicate that several physiological processes are indeed affected by bovine milk components.

This collection of review papers summarises and synthesises our current state of knowledge with respect to the bioactivity of bovine milk and its molecular components. In the first section, an overview is presented of those bioactive substances that have been identified in bovine milk and colostrum, including their purported bioactivity and physiological levels of biologically active components. In the second section, discussions of biological activity are expanded to draw in those areas where milk-borne bioactive substances have been shown to have an influence on physiological processes, paying particular attention to short-falls in our current knowledge base, and the potential for development of milk-based foods that can utilise bioactivity to improve human health.

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''Bioactive substances in milk and colostrum
is
mother language on a substrate basis''