Abstract
Chronic diseases associated to modern lifestyle habits are usually related to immune system malfunction. In this context, since diet is very well-known to modulate host resistance to infectious and inflammatory processes, the consumption of fibre and probiotics seems to be a promising nutritional tool for immune system modulation in different populations. Health effects of dietary fibres and probiotics have been extensively documented in numerous epidemiological and intervention studies, especially their beneficial effect on intestinal microbiota with important clinical implications in the prevention and/or treatment of infectious and inflammatory diseases. Mechanisms may include modulation of the functional properties of the microbiota, epithelial cells, dendritic cells and immune cell types. Prebiotics have been extensively reported to affect the composition of the gut microbiota, stimulating directly or indirectly putative beneficial gut commensals other than lactic acid bacteria, opening promising areas of research for the discovery of new probiotic strains and symbiotic combinations. Age-related changes in gut physiology, microbiota and mucosal immune response are well established. Moreover, exposure to different challenges during life such as early encounter of environmental insults in the newborn, infant formula feeding, antibiotic treatment, gastrointestinal diseases and stress, also interferes with the normal development and balance of the healthy gut microbiota. Therefore, the current short review gives an overview of today’s main aspects of the effect of fibres, probiotics and synbiotics on the immune system in different life-stages.

Keywords
Immunomodulation, Fibre, Probiotics, Lifespan.