

# The status of 'biotics' in fermented foods

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## Introduction

First unintentionally, but then increasingly by design, humans have employed microbes to transform edible substrates into fermented products: tasty and nutritious foods, potentially able to deliver health benefits. Fermented foods have been an important source for the isolation of specific microbes that, delivered in either their viable or inanimate form, can confer a health benefit to the host (probiotics and postbiotics, respectively). In addition, there are naturally occurring, or microbial substrates present in fermented foods that may be selectively utilized by host microbiota that also confer a health benefit (prebiotics). For example, some of these substrates may be synthesized from lactose during milk fermentation or from the cell wall materials of vegetables during the fermentation of kimchi. Would it be fair to state that some fermented foods may deliver all biotics at once? The recent definition of synbiotics acknowledges the fact that it is possible to deliver a probiotic and prebiotic together under the term of "complementary synbiotic". Is there any rationale in suggesting the existence of a "complementary all biotics-fermented food"? The aim of this Discussion Group is to consider the scientific evidence on this topic and debate if there could be any fermented food that could be considered to deliver all biotics (probiotics, prebiotics, postbiotics) together. In order to achieve this goal, we have identified 10 key discussion points, some of which have a speaker to deliver a short presentation. The rest of the key points will be called out during the session in order to be discussed by participants.

## Key discussion points

- 1) The biochemical complexity of fermented foods. Jonathan R. Swann
- 2) Yoghurt: a microbiologically defined dairy-based fermented food. No speaker assigned.
- 3) Oat-based fermentation in Nordic countries: the ProViva case and others. Seppo Salminen.
- 4) Could the rationale for complementary synbiotics be applied to define a "complementary all-biotics fermented food" ? Kelly Swanson.
- 5) EPS and GOS obtained by trans-galactosylation of lactose during milk fermentation as prebiotics. Patricia Ruas-Madiedo.
- 6) Evidence of yoghurt pure cultures as probiotics (not as part of the yoghurt matrix) and EPS produced by yoghurt bacteria as prebiotics: do they act as complementary or synergistic synbiotics? No speaker assigned.
- 7) Do live and dead cells maintain their number along storage? If not, how can this impact on the health benefits? Miguel Gueimonde.

- 8) Kimchi and sauerkraut: can they deliver vegetable fibers with prebiotic effects? Hannah Holscher.
- 9) Artisanal (undefined) versus commercial (defined) kefir: live and dead microbes, metabolites and kefirin as prebiotic. Paul Cotter.
- 10) How much reproducibility of fermented foods can be achieved from batch to batch? From defined (yoghurt) to undefined products (kimchi). No speaker assigned.

**Expected outcome of the discussion group:** to determine if there could be minimum criteria for a fermented food to be considered as a vehicle of all biotics. If the group reach a consensus, the next step could be to develop an opinion paper on the topic which would be published.