



“HealthBread4Kids”: Nutritional concept development and validation for normal and overweight children aged 6-16 years

Research Team

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Background

Consuming a healthy diet is essential for the prevention of Western wellness associated chronic diseases as well as for the management of health care associated costs¹. Despite the fact that there are strong recommendations made by health authorities and governments, it seems very difficult to change eating behavior and habits, reflected in an ever-increasing prevalence of obesity, diabetes and CVD¹

There is also a global concern about the impact of high sodium intakes and the development of high blood pressure, a major risk factor for coronary heart disease and stroke. Accordingly, global attempts are being made to reduce salt intake¹.

In the Netherlands, the highest contribution of food to salt intake is by bread consumption². Reducing bread salt content is a real challenge, however. On the one hand because of the required role of sodium in the dough preparation, on the other hand because of very poor sensory perception leading to clear disliking and non-consumption of low salt bread. There is a large body of evidence that consuming whole grain bread is related to significantly reduced risks of developing cardiovascular disease, type 2 diabetes and certain types of cancer³⁻⁵. Additionally there are strong indications that whole grain consumption favors weight management and may help reduce developing overweight⁶.

In the Netherlands, we see an ever increasing number of young children having overweight with current levels of > 15 % overweight!⁶ Many factors may play a role in developing overweight but a few are of particular influence. Apart from developing healthier food compositions, tackling overweight should above all happen at a family- and school behavioral level, where the role of parents, teachers and “ childhood food and drink environment” are expected to be crucial factors.

¹WHO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases 2002. ²RIVM rapport 350050007/2012. ³Aune D. et al. *BMJ* 2011; ⁴Hauner Hanset al: *Ann Nutr Metab* 2012;60(suppl 1):1–58. ⁵Fardet Anthony. *Res. Rev* (2010), 23, 65–134. ⁶Jonnalagadda Satya S., et al. *Nutr.* 141: 1011S–1022S, 2011. ⁷Schokker DF et al. *Obes.Rev.* 2007 Mar;8(2):101-108

Objectives

Product criteria and related effects to be studied:

- 1- Basic nutritional profile: very low salt, low trans- and saturated fat. How low is possible and what are the predicted health benefits of replacement vs. normal regular brown or white bread?
- 2- Special nutritional profile: high in health supporting plant (cereal) bio-actives and relatively high fiber and protein. How high is possible within the boundaries of required sensory profiles and what are the supposed health benefits of consuming a bread as such compared to a regular brown- or white bread?
- 3- Sensory criteria: what are children’s specific sensory “like” profiles for bread and can these be met with **HealthBread4Kids**
- 4- Metabolic response: what is the glycemic-, lipidemic-, satiety- and quantitative food intake response of consuming **HealthBread4Kids** compared to a regular brown or white bread”
- 5- Parental product purchase decision cues. What do parents feel is essential for purchase in terms of composition, sensory and health that would support purchasing **HealthBread4Kids**?

Valorisation

Targeting a clearly defined favorable sensory profile of children, the **HealthBread4Kids** concept, will lead to the development and testing of an innovative and HEALTHY bakery/bread product. Metabolic response data based on generally accepted biomarkers will help substantiate expected health effects of reducing high glycemic/low nutrient dense white bread vs. the low glycemic, high nutrient dense **HealthBread4Kids**.

Science based benefit claims will help develop optimal “product labeling on pack” as well as “product benefit communications “ to parents, teachers, health professionals: 1) Salt reduction, 2) Low fat/transfat, 3)Cholesterol lowering, 4)Low glycemic, -lipidemic, 5) Satiety inducer supporting weight management.

Consumer data regarding like, dislike and purchase intentions will lead to strong communication recommendations to support marketing. Success will help initiate long term interfaculty follow-ups in the area of validation of educational nutrition tools and substantiation of benefits.

Approach

- 1- Gaining insight into which HEALTH-, product- and value proposition criteria are essential to meet for a successful development and placement in the market of a **HealthBread4Kids** aged 6-16 years.
- 2- Conducting research to validate the health and sensory concepts developed
- 3- Developing educational and marketing tools targeting children and their parents, within existing food law boundaries and substantiation the presumed effectiveness.

HOW:

- Desk research on specific nutritional needs of children and the related nutritional value of the variety of ingredients to be used in the recipe (nutritional concept development)
- Development of a salt-alternative combination that helps to reduce sodium in bread to a level that is lower than in any other bread, without compromising sensory liking.
- Desk research on sensory development and sensory likes in children. Sensory testing of concept product compared to a regular brown/white bread.
- Metabolic testing of the effects on consumption to substantiate effects.
- Consumer research addressing children’s and parent’s “like to hear, feel, taste, smell” cues required for developing an appropriate communication concept and its validation.