



What determines ingredient awareness of consumers? A study on ten functional food ingredients



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ABSTRACT

Given the importance of consumer awareness of functional food ingredients for healthy food choices, the aim of this study is to explore consumers' ingredient awareness and the determinants which influence the awareness about functional food ingredients.

A sample of 200 German consumers was interviewed via CATI (computer aided telephone interview) during September 2011. The participants have been asked about their specific awareness regarding to ten functional food ingredients. Likewise, determinants like health status and health motivation have been assessed and their influence on the construct "consumers' ingredient awareness" has been tested by employing structural equation modeling.

The study shows that consumers' ingredient awareness varies throughout the sample. Overall it can be stated, that 19% of consumer awareness about functional food ingredients is explained through the described model based on the following predictors: age, educational level, health status, health motivation and information strategies. Among these factors, consumers' health motivation seems to have the highest relevance to explain consumer awareness. But also the determinants information strategies as well as the education show a significant influence on consumers' ingredient awareness. As health motivation shows the highest impact on consumers' ingredient awareness this study underlines the importance of prevention propensity for healthy food choices.

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1. Introduction

Consumers' awareness of functional food ingredients – ingredient awareness – is an important antecedent for nutritional knowledge as awareness is a necessary precondition for general knowledge (Peter, Olson, & Grunert, 1999). In this context, ingredient awareness encompasses consumers' familiarity with certain ingredients whereas the further steps from ingredient awareness coming to knowledge might be the understanding of the underlying health benefits of certain food ingredients, e.g., consumption of foods containing antioxidants and prevention of diseases (Ares, Giménez, & Gámbaro, 2008b). Moreover, ingredient awareness influences consumers' perception and acceptance of functional foods (Pounis et al., 2011). In this sense, functional foods can be interpreted as the carrier for functional ingredients with certain health benefits. In summary, extant studies suggest that products containing certain ingredients will be more successful on the market if the consumer is aware of the inherent ingredients (Chen, 2011; Del Giudice & Pascucci, 2010; Vassallo et al., 2009). This is

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due to the insight that acceptance of functional foods will increase with a higher nutritional knowledge (Bech-Larsen, Grunert, & Poulsen, 2001; Krutulyte et al., 2011).

Beyond that, it seems important to distinguish between consumers' nutritional knowledge in general and the more specific perspective of ingredient awareness: On the one hand, consumers' nutritional knowledge in general can encompass multifaceted dimensions like knowledge about diet or about calories (Scagliusi et al., 2009), but also as knowledge about the content of a certain ingredient in a food product, e.g., the fat content in milk (Harnack, Block, Subar, Lane, & Brand, 1997). General nutritional knowledge is important for healthy food choices as several studies show that nutritional knowledge in general is associated with dietary food choices (Parmenter, Waller, & Wardle, 2000; Pounis et al., 2011; Wansink, Westgren, & Cheney, 2005) that promote health (Wardle, Parmenter, & Waller, 2000). On the other hand, ingredient awareness can encompass the sole familiarity of distinct ingredients (Bröring, 2005) as well as awareness of food sources of functional ingredients as for instance sources of dietary fiber (Ares, Giménez, & Gámbaro, 2008a). So the term ingredient awareness delivers a specific term focusing on antecedents of knowledge about food ingredients themselves. In contrast to existing studies, we do not focus on the general nutritional knowledge, but take a rather

specific approach. Hence, in the following, we will focus on consumers' awareness about specific health ingredients in particular: ingredient awareness.

Within the last decade a plethora of different functional food ingredients have been placed on the market (Ares et al., 2008a). Examples of these functional food ingredients are vitamins, minerals, antioxidants, probiotics and phytosterols (Bröring, 2005, 2010). These ingredients differ with respect to consumer awareness as well as to the extent of scientific evidence. Functional food ingredients such as vitamins and minerals are well-known among a wider range of consumers (Hoefkens, Verbeke, & Van Camp, 2011), possibly due to the fact that they are the most common type of dietary supplements (Rock, 2007) and based on substantiated scientific evidence. But there are also more recently described functional food ingredients which claim to be beneficial for nutritional and health aspects such as probiotics and phytosterols (Verhagen, Vos, Francel, Heinonen, & Van Loveren, in press). The level of newness of scientific findings resp. limited research history may lead to a lower nutritional awareness of these more recently described ingredients (Parmenter et al., 2000).

Given the importance of consumer awareness as an antecedent of knowledge of functional food ingredients for healthy food choices, the aim of this study is to explore consumers' ingredient awareness and the determinants influencing it.

This raises the question of what is determining ingredient awareness. Extant literature suggests that it may be affected by aspects like individual characteristics, situational, attitudinal and behavioral factors as well as the use of nutrition information sources (Drichoutis, Lazaridis, & Nayga, 2005) – in other words the individual information strategies of consumers (Ref. Fig. 1 for an overview of the determinants and their relationship used in this study).

The first category of individual characteristics includes inter alia socio-demographic criteria (Drichoutis et al., 2005). In this sense, it is important to consider that socio-demographic factors are not usually causal predictors themselves, but rather serve as proxies for something else (Grunert, Wills, & Fernández-Celemin, 2010). Regarding the literature on nutritional knowledge, important factors seem to be consumers' age as well as the educational level (Carrillo, Varela, & Fiszman, 2012; Krystallis, Maglaras, & Mamalis, 2008; Mowe et al., 2008). But how do these two factors influence the degree of ingredient awareness?

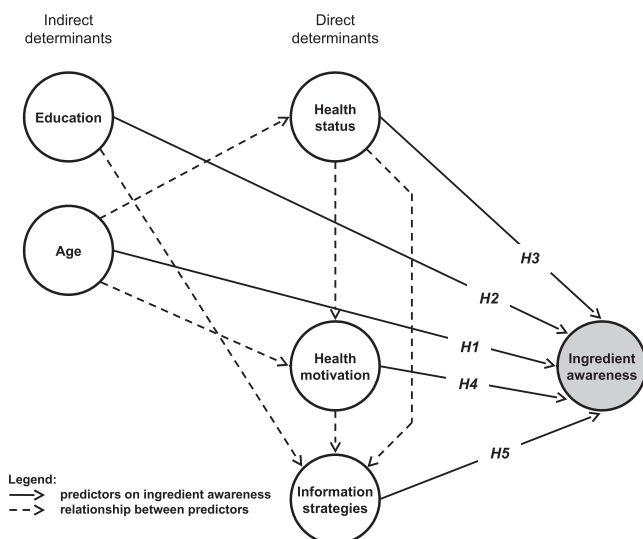


Fig. 1. Conceptual model showing the determinants on ingredient awareness as well as the relationship between the determinants.

In literature, there are several ways described how age influences consumers' knowledge about nutritional aspects. Drichoutis et al. (2005) argued that with increasing age consumers have more health problems. As a result, with age diets become more restricted and nutritional knowledge and awareness as its antecedent increase (Drichoutis et al., 2005). As young consumers do not seem to be interested in health care issues the health motivation increases with age. Young consumers' nutritional knowledge is lower than in the group of middle agers who become increasingly aware of diseases related to diet leading to a higher involvement and therefore, their nutritional awareness and, thus, knowledge increases (Parmenter et al., 2000). Against this literature background, the question arises whether the age of consumers influences also (through the above described effects) ingredient awareness leading to hypothesis 1:

H1. The higher the age of a consumer is the higher is the ingredient awareness.

Moreover, the socio-demographic criterion "educational level" seems to influence ingredient awareness (demonstrated for instance by (Drichoutis et al., 2005; Parmenter et al., 2000)). Thereby, education incorporates nutritional information leading to higher nutritional knowledge (Parmenter et al., 2000). Furthermore, consumers with a higher educational level seem to be more acquainted with the use of several information sources like newspapers and magazines resulting also in a higher nutritional knowledge (Parmenter et al., 2000). As more educated consumers seem to be more likely able to understand complex relationships of diet and diseases, this may also lead to a higher nutritional knowledge (Parmenter et al., 2000). Based on this discussion on the relationship between educational level and nutritional knowledge in general, the second hypothesis focusing on ingredient awareness as an antecedent of knowledge can be derived:

H2. The higher the educational level of a consumer is the higher is the ingredient awareness.

Considering the second category of determinants, namely situational factors, consumers' health status and health motivation seem to play an important role. Regarding the health status as first factor it is evident that with a lower health status the visits to the doctor increase due to the treatment of diseases (Jürges, 2007). Therefore, the determinant health status focuses on curative aspects. During these visits the doctors as health professionals may give advice on the best way of nutrition related to the relevant disease, e.g., fat consumption and cardiovascular diseases (Tate & Cade, 1990). Therefore, consumers with a lower health status and consequently more contacts to the doctor (Jürges, 2007), are offered more detailed information on the relationship of nutrition and health (Tate & Cade, 1990). Moreover, the health status reflects the personal relevance and thus, influences consumers' involvement which in turn may increase consumers' ingredient awareness due to the higher information search activity (Kroeber-Riel, Weinberg, & Gröppel-Klein, 2009). This allows deducing the third hypothesis:

H3. The lower the personal health status of a consumer is the higher is the ingredient awareness.

The general interest in health issues leads to a specific health motivation – described for instance through the health motivation scale introduced by Jayanti and Burns (1998) including the following aspects: prevention of health problems or health hazards as well as the concern about these problems considering the own situation and the situation of related people like relatives and friends (Jayanti & Burns, 1998). In contrast to the health status, the construct of health motivation follows a preventive approach. The perceived health risk increases the more a consumer is afraid that his health is likely to suffer in the future (Drichoutis et al., 2005).

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