

„CLEAN LABEL“ MEAT PRODUCTS - HOW TO GAIN CONSUMER CONFIDENCE?

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Abstract: There is no common and objective definition of clean label food. „Clean label” trend has influence the food industry to reveal on clearly way and with simply understanding show presence or absence a certain ingredient or additive, if the food produced by a „eco-friendly” approach. A review of recent studies on clean label movement worldwide report about important facts for scientific and economic community in development countries, like Serbia.

Key words: „clean label“, meat products, consumer preferences, review

Introduction

The development of human society has led to a disproportionate (often even extreme) increase in the income of the employed population. Food needs have a trend of constant growth, and quantities to fully meet consumer needs seem unattainable. The level of consumption and quality of food is generally not in line with needs (daily intake of nutrients is significantly above acceptable levels). The consequences of the combination of „hungry eyes“ and high income with minimal physical activity are obesity and economically and healthily fatal non-infectious diseases, especially in the population of young people. Reaching its zenith, consumers' perceptions of food have changed recently. Consumers are expressing fears due to the increasing addition of ingredients in food that are the chemically synthesized, especially in meat products. Consumers do not trust E-numbers. E-numbers are for them only chemicals which do not belong in our food (Haen, 2014). Consumers worry more about food additives than that they do for microbes (Shim et al., 2011). Product industrialization suppresses traditional production, which is dominated by profitability over quality. The seemingly necessary use of synthetic additives in order to improve the quality properties of meat products, which have a potential or proven harmful effect on human health, is today the subject of many speculations, on modern concepts. Preservatives, antioxidants, acidity control agents, colorants, flavor enhancers, spices are added. There are restrictions on the use of certain ingredients provided by law and bylaws (nitrites,

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phosphates, sorbates), due to the direct toxic effect on health or the consequences of their interactions in food and the human body. The real concern of consumers due to the application of the above-mentioned supplements has led to the realization of various studies in which multidisciplinary teams of researchers have been making efforts for a long time to replace synthetic ingredients with natural ones or reduce their technological dose. Research is at the level of academia, institutes and industry. Interest in food with a clean label is increasingly prevalent in developing countries today, although the movement to produce healthier or functional food began in developed, economically strong countries, demanding and picky markets. Asioli et al. (2020) were in their thoughtful review discussed the effectiveness of sustainability-related food labels in promoting more sustainable food consumption around the world.

However, the term „clean label“ has not been clearly defined, so it can be concluded that consumers still do not have clear information and precise understanding when buying „clean label“ food. Therefore, it must be precisely defined what all the attributes must be of food declared as a „clean label“, and that the regulations created in this way are respected (Yong et al., 2020). Clean labeling is crucial in the food industry, especially for meat products, which contain many additives. The International Agency for Research on Cancer within the World Health Organization (WHO) announced in 2015 that meat products and red meat are carcinogenic (Hur et al., 2015). Nitrites are the most commonly used synthetic additives in meat processing, because they directly affect the most important properties of pickled dried meat products (color formation) and exhibit strong antimicrobial (AM) and insufficiently tested antioxidant (AOX) activity in meat products. The acceptability of modified meat products, in which nitrite of synthetic origin has been replaced by pre-converted nitrite of natural origin, is done by assessing the positive attitude of consumers and the level of reduction of residual nitrite content (Yong et al., 2021). Research study in recent decades has focused on improving the quality and health safety of meat products by taking advantage of pre-converted nitrite (Generally Recognized As Safe - GRAS status, low toxicity, strong antimicrobial and/or antioxidant activity, low cost) as an additive of natural origin and limiting its weakness (residual carcinogenic risk).

Applications of the pre-converted nitrite have been reported. The most common sources of nitrite in nature are vegetables and fruits (by adopting nitrite from artificial fertilizers for soil fertilization). Food business operators has displaced focus to the development of processed meat products that are not dangerous to health by eliminating food additives or replacing them with ingredients of natural origin (Kim et al., 2019; Raikos and Ranawana, 2019; Kurćubić and Vesković, 2020; Lee et al., 2020). In Serbia, Kurćubić et al. (2014a) successfully produced uncured Fermented Dry Sausages - FDS (without the addition of nitrate or nitrite), fortified with polyphenolic compounds that are part of the ethanolic extract of the Serbian plant *Kitaibelia vitifolia* (30.0 g/kg of meat dough in PS I and 12.5 g/kg of meat dough in PS II) and provide healthier products to consumers. *K. vitifolia* extract in an active concentration of 12.5 g/kg of meat

dough allows to maintain the conventional quality of sensory properties, color and textural properties of FDS with added nitrites (Kurćubić et al., 2014b). There is a need for future studies, the aim of which would be to determine the most favorable active concentration, in a comprehensive manner.

There is also a double challenge for the sustainability and regular supply of phosphorus (as an essential element for life on earth): environmental pollution, especially water due to its emission (uncontrolled and ecosystem-unacceptable algae growth) and scarcity (it is believed that by 2035 there will be no possible to meet phosphorus needs). The use of phosphates in the agri-food sector accounts for about 90% of the total demand for phosphates and a negligible part (1% -2%) is due to the use of food additives containing phosphorus (Schröder et al., 2010). Today the use of phosphate in the meat industry sometimes has negative connotations, so producers are increasingly dealing with natural trends or „clean label“ trends, increasingly interested in phosphate substitutes that fit consumer preferences for perceived natural foods (Petracci et al., 2013; Roman et al., 2017; Stajić et al., 2020).

The UK was a pioneer of clean food labeling in the 1990s (Yong et al., 2020). Clean labels of meat products guarantee that they do not contain added synthetic additives, that their biological value is preserved by minimal food processing. A concise list of selected raw materials is visible, easy to understand, and the way they are processed by traditional methods (Asioli et al., 2017; Câmara et al., 2020). Lee (2015) and Aschemann-Witzel et al. (2019) have published the results of their research, in which they describe that consumers are interested in buying food with a „clean label“ because the ingredients in the product are clearly indicated on the packaging. The use of complicated technological production methods is an obstacle in the wider application of clean label food declaration. Namely, food businesses operators have begun to evaluate the use of eco-friendly, natural additives instead of synthetic chemicals (Ryu and Lee, 2018). Social education, food company campaigns and food producers' own initiatives promoting new, „healthy“ products have had a significant impact on consumers in Poland, who have declared in their surveys that they are interested in the sensory properties and safety of food and their impact on health. „Clean label“ trend is one of fastest growing movements aimed at improving quality of foods, which has a direct positive effect on human health. The „clean label“ has not yet been defined in food law and is understood rather subjectively (Cegiełka, 2020).

Meijer (2020) conducted a survey in her master thesis, with a questionnaire that contained 167 responses analysed within the study. The results showed that consumers find that the safety is the most important attribute of a food product. Even though the results reveals that E-numbers are not seen as unsafe or safe, most of the respondents preferred the ingredient list with the „clean label“ format. The most mentioned reason which is indicated for being the reason to prefer this option is it being the easiest to read option.

Survey of Hartmann et al. (2018) had a goal to examine how “free-from labelling” influences on consumers' perception of food and whether the absence of an ingredient is considered an indicator of improved nutritional value of the

product. Online study was conducted in four EU countries: the United Kingdom, Sweden, Poland, and France (overall N = 1950). Four "free-from labels" (lactose-free, gluten-free, GMO-free, and palm oil-free) were examined using different product categories that these labels typically appear on. Healthiness perception was evaluated by comparing products with the free-from labels to identical products without the labels. Potential predictors for healthiness evaluation and intention to pay a price premium were assessed, including nutrition knowledge, information-seeking on food packages, advantage for food naturalness, general health interest, trust in actors in the food domain, and affect regarding the absent ingredients. Products with a free-from label were considered healthier than products without such a label, with the strongest effects occurring for labels indicating that products were free of GMOs and free of palm oil.

Conclusion

We emphasize the need for legislative intervention in order to give a more precise definition of the term „clean label“. It is also necessary to educate consumers on food quality assessment.

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„CLEAN LABEL“ PROIZVODI OD MESA - KAKO DO POVERENJA POTROŠAČA?

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Sažetak

Ne postoji zajednička i objektivna definicija „clean label“ hrane. Trend „clean label“ uticao je na prehrambenu industriju da na jasan način i sa jednostavnim razumevanjem pokaže prisustvo ili odsustvo određenog sastojka ili aditiva, ako je hrana proizvedena „eco-friendly“ pristupom. Pregled nedavnih studija o pokretu „clean label“ širom sveta izveštava o važnim činjenicama za naučnu i ekonomsku zajednicu.

Ključne reči: „clean label“, proizvodi od mesa, preferencije potrošača, pregled

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