

Clean Labeling for Food



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'Clean label' has become a buzzword to food industries in recent years, which is driving innovations in food product development. Many major food companies (like Campbell Soup, Nestlé, Mars, etc.) have committed to remove artificial food additives. Thus, 'clean label' is no longer a trend but becoming a necessity in the U.S. and globally (Watrous, 2015). A successful 'clean label' revolution relies on a deep understanding about consumer viewpoint, but many consumers do not know the meaning of 'clean label' (Vierhile, 2016; Gelski, 2016). Moreover, it is not easy for food companies to switch from artificial to natural ingredients overnight. The following information will discuss in details about 'clean label' from both consumer and industry viewpoint.

Definition

Usually, there are five components required on a food label: 1) statement of identity; 2) net weight of product; 3) manufacturer's address; 4) nutrition facts; 5) ingredient list, allergen and health claims. Currently, there is no regulatory or legal definition for 'clean label'. This term starts from consumer perception of 'natural', and then defined by food manufacturers. The meaning of 'clean label' may be different to different people, but it tends to involve the following concepts (Hutt and Sloan, 2015; Vierhile, 2016):

- 1) Natural: no artificial flavors, artificial colors, artificial preservatives, and synthetic additives.
- 2) Simplicity: less chemicals; choose recognizable ingredients that do not sound chemical or artificial.

3) Transparency: how ingredients are sourced and how products are manufactured.

4) Minimally processed: less processing; application of traditional processing techniques that are understood by consumer without the perception of being artificial.

Therefore, consumers could identify a 'clean label' product by a shorter ingredient list or some terms on food labels like: 'natural', 'simple', 'no artificial', 'no preservatives', etc.

Consumer insights

The 'clean label' phenomenon emerges from a series of food incidents that occurred around the world, according to Ewa Hudson, the global head of health and wellness, nutrition and ethical labels research for Euromonitor. From food scandals worldwide to negative research results about artificial ingredients increased the consumer's concerns about food quality and raised their desire for natural food products (Nunes, 2016).

Although 'clean label' comes from consumer demand, its meaning is unclear to many of them. A 2015 U.S.-based survey indicates that 45% of U.S. consumers do not know what 'clean label' means and a generation gap (age 18-44 years vs. 45 years and above) exists in the understanding of this term (Figure 1) (Vierhile, 2016).

Moreover, the perceptions of 'clean label' vary by age (Vierhile, 2016); respondents aged 18-34 correlate 'clean label' with 'natural' or 'organic' claims, which aligns with 35-44 segment who also takes 'minimally processed' into consideration; but consumers over 44-year-old equate this term with 'free from bad ingredients.'

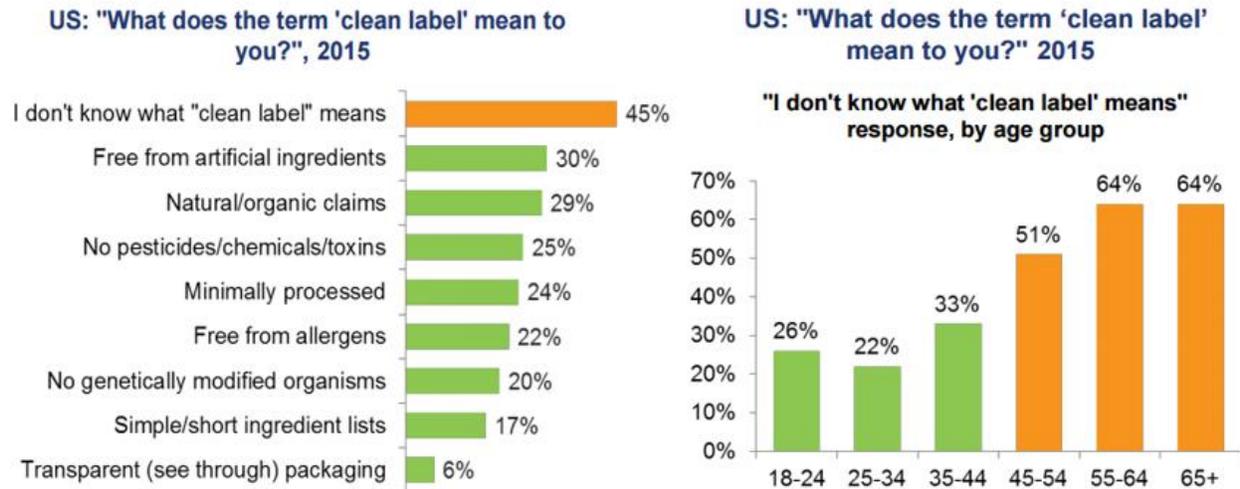


Figure 1. U.S. consumer insights about 'clean label' (Vierhile, 2016)

Difference from 'natural' and 'organic' labeling

'Clean label' may be associated with 'natural' and 'organic' claims from consumer perspective, but it is not the same to them.

'Natural' claim

The U. S. Food and Drug Administration (FDA) has no regulatory definition for 'natural'-related labeling, but it states clearly on the expectation: 'the agency has not objected to the use of the term if the food does not contain added color, artificial flavors, or synthetic substances (FDA, 2017).' In 2016, FDA requested information and public comments on use of 'natural' and it may express this claim more precisely in the near future (FDA, 2016). U.S. Department of Agriculture (USDA) considers 'natural' as 'a product containing no artificial ingredient or added color and is only minimally processed.' Minimal processing means that the product was processed in a manner that does not fundamentally alter the product. The label must include a statement explaining the

meaning of the term natural (such as "no artificial ingredients; minimally processed") (USDA, 2015).’ USDA has also developed a decision tree to classify synthetic and non-synthetic (natural) materials (USDA, 2016).

According to FDA and USDA, the major difference between the claim of ‘natural’ and ‘clean label’ relies mainly on food colorings. Natural colorants (like carotenoids and anthocyanins) are not allowed in ‘natural’ labeling, but are acceptable in ‘clean label’.

‘Organic’ claim

‘Organic’ refers more than food product itself. Its way of production must meet strict standards of National Organic Program (NOP) administered by USDA Agricultural Marketing Service. There are four categories of ‘organic’ labeling based on product composition and the specifications are available on the website of ‘Organic Labeling Standards’.

Some compounds permitted by NOP in organic food products are unacceptable in ‘clean label’ products, such as potassium bicarbonate, ammonium bicarbonate, and calcium hydroxide (Hutt and Sloan, 2015).

Industry activities

Without formal definition, food companies, restaurants and retail stores take their own actions to respond to consumer demand for ‘clean label’ products. Many major manufacturers have committed to narrow down their ingredient list (Table 1), and some of them also put explanations about controversial ingredients on the label to make them sound ‘clean’/ natural to consumers (Hutt and Sloan, 2015). Other strategies like

ingredient counts are adopted by some food companies to deliver the concept of 'clean label' (Vierhile, 2016).

Challenges for 'clean label' progress

The movement of 'clean label' is complicated and full of challenges that need to be overcome. The first consideration is the functionality of natural ingredients. Many chemicals or additives are used to ensure the safety of food or maintain shelf life. For example, essential oils from herb and spices have been proven to have antimicrobial properties, which make them promising substitutes for preservatives. However, their efficacy must be fully investigated before replacing current preservatives (Chen and Hart, 2016). The second consideration is the effect of such a change on sensory attributes. Involvement of spices as preservatives may introduce their unique flavors, which could be either pleasant or detrimental depending on individual food products. It should also be noted that going 'clean label' is more than removing ingredients, because these ingredients may not work alone in food products. Take flavored beverage as an example, the oil-based flavor agent needs the help of an emulsifier to disperse it throughout the water-based drink. Simply taking off the emulsifier will lead to a huge change in the sensory characteristics including appearance and flavor (Marrapodi, 2015). In addition, cost and regulations (like labeling, usage limit, GRAS) must be addressed by manufacturers (Chen and Hart, 2016).

Table 1 Statements on 'clean label' from selected food manufacturers

Food Manufacturer	Statement on Ingredients
	Removed artificial preservatives, flavors and dyes from Kraft Macaroni & Cheese
	Nestlé USA removed all artificial colors from chocolate candy products, and removed artificial flavors from entire line of frozen pizza and snacks
	The no-no list contains artificial preservatives, sweeteners, and flavors along with colors from artificial sources
	Removed 14 artificial ingredients
	Free From 101, a long list of artificial preservatives and ingredients
	Banned a long list of artificial colors, flavors, preservatives and sweeteners
	North America products without artificial colors or flavors by 2018; launched <i>Well Yes!</i> Soups that have no artificial colors, flavors, ingredients, or modified starches
	Will use of fewer and more natural ingredients in Dannon®, Oikos® and Danimals® branded products
	Will remove artificial ingredients from all its cereal products by end of 2017
	Removing artificial colors and flavors from its products by the end of 2018.
	Will remove artificial colors from our human food products over 5 years in Feb 2016 announcement
	Plans to remove artificial flavors, colors and preservatives from its food in North America by 2017
	Removing artificial colors and flavors from many products.

Future

Food Business News reported that in 2015 the global sales of 'clean label' foods and beverages was estimated to be \$165 billion with \$62 billion from North America, and this global sales might reach \$180 billion by 2020 (Nunes, 2016). Therefore, more and more food manufacturers will follow the movement of 'clean labeling.' The process of going 'clean label' is difficult and manufacturers must conduct series of tests to ensure the safety and quality of alternative ingredients before they can use them in the products.

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*This reference was used for the 'Clean Label' logo on the front page.