



Knowledge, beliefs, habits and attitudes of California consumers regarding extra virgin olive oil



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ABSTRACT

A combination of qualitative and quantitative methods was used to gain an understanding of the relevant factors affecting purchase and consumption behavior for olive oil among American consumers living in Northern California. First, focus groups were conducted, which included a series of scripted questions, a free word association projective technique, and an informed tasting session. Second, survey questionnaires were designed based on the focus group findings, and administered with a group of US consumers to validate and further explore the qualitative findings. The diverse consumer experiences with olive oil resulted in differences in existing perceptions regarding what constitutes an extra virgin olive oil, and determined how the combination of uncovered factors influenced purchase and usage. Even though most consumers felt olive oil was a 'healthy' food, most were unaware of the bioactive components of olive oil or of their specific health benefits. The survey showed that opportunities exist to create different types of olive oil products for consumers with different purchase and consumption habits, experiences and needs, and that educational efforts to promote better understanding of olive oil and its 'extra virgin' version, and their health benefits are warranted.

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1. Introduction

Even though olive oil has been a key staple of the Mediterranean Diet for centuries, olive oil consumption in the U.S. represents a mere 8% of all available fats and oils (Vossen, 2009). Consumption of olive oils in the U.S., however, has been increasing steadily for the past 20 years. Yet, the average local yearly production from 1990 to 2007 was about 0.5% of the total consumption level (Vossen, 2007). This large production–demand gap has been mediated mainly by importing olive oils produced in Mediterranean countries.

The health benefits of olive oil have been documented in numerous publications (Brownlee, 2005; Estruch et al., 2013; Martinez-Gonzales & Sanchez-Villegas, 2004; Pérez-Jiménez, Ruano, Perez-Martinez, Lopez-Segura, & Lopez-Miranda, 2007; Saija & Uccella, 2001; Tuck & Hayball, 2002). The various components producing those benefits have been identified from monounsaturated fatty acids to specific types of polyphenols.

Sensory properties of food have been acknowledged as critically important determinants of food choice (Meiselman & MacFie, 1996) as reflected by the multitude of sensory studies published involving sensory preferences and acceptability of various food products. Yet, non-sensory factors have also been recognized to contribute to the decisions consumers make with regard to food selections (Jaeger, 2006).

Consumer behavior, specifically the acts of consumption, encompasses the acquisition, usage and disposal of products, ideas, services or events that provide values (Holbrook, 1987). Because of the growing consumption of olive oil, and demands for food innovation for 'locally grown food', 'foods for health', and 'natural foods' in the U.S., we hypothesized that the existing extra virgin olive oil consumption among American consumers in California is partially driven by the food innovation themes mentioned above. We also hypothesized that existing usage habits and the new knowledge acquired about California produced extra virgin olive oil would influence future consumption behavior for California produced extra virgin olive oils. Because most of the U.S. production of olive oil originates in California, we chose to test our hypotheses with consumers living in Northern California.

Little is known about U.S. consumer knowledge, beliefs, habits and motivations to use olive oils. Hence, a combination of qualitative and quantitative methods was utilized to understand consumer behavior for extra virgin olive oil. The main goals of this study were to investigate existing consumption and purchase habits for olive oils, to examine the potential for new knowledge acquisition influencing future consumption of California produced extra virgin olive oil, and to understand the sensory and non-sensory factors influencing consumption behavior of Californian consumers.

2. Materials and methods

The research consisted of two parts. First, four focus groups were conducted over two days with select US consumers to gain an

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understanding of the relevant factors affecting American consumer purchase and consumption behavior for olive oils. Second, a survey questionnaire was designed based on the focus group findings, and administered with a group of US consumers (i.e. new subjects who did not participate in the focus groups) to validate and further explore the qualitative findings and investigate the relationships among the variables tested.

2.1. Consumers

Focus group participants were recruited at the farmer's market and outside supermarkets in Davis, California, and through classified advertisement in local newspapers and bulletin boards. Survey research respondents were recruited similarly, with one additional recruitment at the Picnic Day event at UC Davis. All interested participants were screened during a telephone interview for simple demographics (e.g. gender, age and occupation) and olive oil and vegetable oil consumption.

A total of 35 consumers (29 F, 6 M, age range 25–70 years, mean age 52 yrs) participated in the four focus groups. Each group was designed to have a mix of demographics in terms of age, sex and oil consumption patterns, to encourage diversity in opinions and views, and opportunities for interactions. One hundred and seventy eight (178) consumers (130 F, 45 M, 3 missing gender, age range 19–83 years, mean age 48 yrs) from Davis, Sacramento and the Bay Area in Northern California completed the survey.

2.2. Research protocol

Focus groups were conducted in the focus group facility of the Robert Mondavi Institute for Wine and Food Science at UC Davis. The second author facilitated the groups over two days. Each session lasted 1.5–2 h. At the beginning of the session, the moderator informed the participants that there would be researchers observing the session behind the one-way mirror and that the discussion would be audiotaped. During the session, the moderator followed the discussion guideline and probed participants for further information when necessary. At the end, participants filled an exit survey and received a gift certificate for their participation.

A focus group discussion guideline was developed to explore existing consumer perceptions and consumption behavior for olive oil products. A free word association projective technique (Colangelo, Stephenson, Westbury, & Buchanan, 2003) that asked consumers what first came to their mind when they heard the words 'olive oil' was used to open the groups, and uncover objects, beliefs or concepts closely associated with olive oil. This was done as part of the focus group discussions.

A series of open-ended questions were asked, addressing issues surrounding buying and consumption motivations, factors affecting purchase for own consumption or gifting, purchasing habits, consumption habits and knowledge about extra virgin olive oil (EVOO). Open-ended questions allowed focus group participants to determine the direction of the response, and provided an opportunity for the participant to answer from a variety of dimensions (Krueger, 1988), and also enabled a broad understanding of existing consumption behavior to examine our hypothesis that existing EVOO consumption was partially driven by some of the latest food innovation themes.

An informed (non-blind) preference ranking sensory test was conducted at the end of the groups to elicit consumer language related to olive oil and to discover whether consumers were affected more by sensory or non-sensory features of the oils (Guinard et al., 2000). Consumers tasted four extra virgin olive oils that spanned a wide range of sensory qualities by dipping 1-inch cut French bread in the oil, with the original olive oil containers placed in front of them for inspection, as they tasted the oils. The same order of presentation of the four olive oil samples was used for all groups. Participants were told that they

would share with each other why they liked or disliked a particular olive oil sample at the end of the tasting session. A ranking preference ballot paper was provided to record their preferences and comments on the olive oils.

The survey questionnaire utilized several question modes to accommodate the large numbers of topics being addressed (e.g. open-ended questions, yes/no, check-all-that-apply, and multiple-choice questions). The questionnaire consisted of three parts – oil consumption and purchase behavior, demographics and psychographics. A gift certificate was provided to respondents upon survey completion. The survey required 25–30 min to complete.

2.3. Data processing and analysis

Tape recordings were transcribed into verbatim reports, and these reports were content-analyzed qualitatively for main and sub-themes throughout the various topics discussed according to guidelines outlined in Krueger (1998).

Survey data was analyzed using multivariate statistics such as hierarchical cluster analysis (HCA), correspondence analysis (CA), and multiple correspondence analysis (MCA) to discover particular patterns in consumption behaviors. Chi-square tests were performed on the CA results that utilized consumer segments as the basis for better understanding the associations between consumer groups and the specific behavioral factors tested.

3. Results

The modified focus group sessions produced valuable insights into consumer perceptions of olive oil and their consumption patterns regarding what concepts consumers associate with olive oil, the range of experiences they have had with olive oil, their olive oil purchasing and consumption habits, what they know about EVOO, the language they use to describe olive oil and their awareness of a number of emerging issues and concerns associated with olive oil production and marketing. Table 1 summarizes the focus groups findings.

Survey research results confirmed the validity of the information obtained in the focus groups. Both sensory and non-sensory factors influencing olive oil purchase and consumption behavior were uncovered. Key findings paralleled the main learnings from the focus groups.

Consumers in the survey research were segmented using HCA based on: (1) types, (2) brands, and (3) origin of olive oils consumed. Based on the HCA dendrograms, three consumer clusters were identified from the survey (Table 2, chi-square test, $p < 0.05$).

Most survey respondents used extra virgin olive oils ($p < 0.001$). In fact, only 11 consumers (6.2%) did not use olive oil that is extra virgin, and only 2 consumers (1.1%) were not sure what types of olive oil they consumed (not shown in the table). The others consumed EVOO alone or a combination of EVOO and some other types of olive oils. The relative proportions of olive oil brands bought were rather similar, but there was a greater tendency for the consumers surveyed to purchase only store brands ($p > 0.05$). The next biggest constituent was consumers who purchased imported brands or imported brands plus some other kind. The smallest consumer group consumed local/California brands or both local and store brands. This research pointed out that among Northern Californians, there were less consumers who consumed solely California produced EVOOs (chi square test, $p < 0.02$). Hence, there is an opportunity for more California produced EVOOs to make it into the homes of American consumers.

Because each of the three criteria produced three separate clusters among the surveyed consumers, the three clusters were used to understand key consumption and purchasing habits asked in the survey by performing CA for the categorical data collected. CA was very helpful for visualizing the results graphically to search for particular patterns. When the consumer segments produced no clear trends or patterns, data were pooled and MCA was used instead of CA.

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