Identification of the Characteristics That Drive Consumer Liking of Butter
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Introduction

Butter consumption is currently stagnant; consumption per capita in the United States increased from 4.5 to 4.8 lbs (2.0 to 2.1 kg) over the period from 2000 to 2004. Production during this time also remained relatively constant, down only 0.5% from the 1,250 million pounds (570 million kg) produced in 2000 (International Dairy Foods Association, 2005). Health concerns have been often cited as the reason many consumers have decreased their butter consumption and increased their intake of margarine (Crandall, 1996). By definition, butter contains 80% milk fat (USDA, 1989). Margarine and vegetable oil spread, in contrast, are made from vegetable oil and contain no cholesterol. The legal definition of margarine is that it contains 80% fat (FDA, 2005). Many butter spreads contain less fat and, by definition, cannot be labeled as margarine. Per capita consumption of margarine in the United States declined between 2000 and 2004, from 7.5 to 5.3 lb/hr (3.4 to 2.4 kg/lb; USDA-ERS, 2006).

Numerous studies have evaluated consumer acceptance of margarine spreads and butter oil blends (Holleman et al., 1995; Michielli et al., 1998; Ayvazis et al., 2001; Chen et al., 2005; Kim et al., 2005). In contrast, few studies have investigated or compared consumers’ perceptions of butter (Crandall, 1996). Using phone surveys to examine consumer perceptions of the health effects, price, taste, and use of butter and margarine. They reported that over half of the consumers surveyed thought margarine contained less cholesterol and fat and fewer calories than butter. Only one-third of the respondents indicated that price was a factor in their decision to buy butter or margarine. The perception of the spreadability of butter based on color was studied by Crandall et al. (1995). Under normal light, consumers reported that yellow butter was significantly easier to spread than their butter counterpart, despite both samples having the same instrumental yield value. Under red light conditions, the perception of spreadability was not significantly different among the two samples.

To our knowledge, no studies have examined consumer attitudes toward the varying flavors exhibited among butters or compared them with margarines or vegetable oil spreads. This study was conducted to identify

Materials and Methods

Butter and Margarine Descriptive Analysis

A descriptive sensory language was first identified to characterize butter flavor attributes. Fifty-six butters were screened and discussed by 5 sensory and dairy experts in three 2.5-hour sessions. Samples included butter aged 0-4 years, lean and medium milk fat content, and retail, mass market, and specialty brands. Attributes were derived from sensory analysis of margarines and vegetable oil spreads.

How the research was conducted.

Explain the design and methods of data collection.
RESULTS AND DISCUSSION

Descriptive Analysis

The sensory language identified differentiated the butters and spreads (Table 2). Principal component plots of the butters were shown in Figures 1 and 2. Principal component analysis (PCA) was performed using SPSS version 12.0 (SPSS Inc., 2001).

What the research data revealed.

Discussion gives researchers an opportunity to comment on the importance of the results.

Figure 1. Principal components biplot of descriptive sensory analysis of commercial butters. Number represent percent variance (Table 2). Underlined numbers represent those chosen for consumer testing. ACD = principal component 1, PCD = principal component 2.

Figure 2. Principal components biplot of descriptive sensory analysis of commercial butters. Number represent percent variance (Table 2). Underlined numbers represent those chosen for consumer testing. ACD = principal component 1, PCD = principal component 2.

FOCUS GROUPS

Participants indicated that they used butter several times a week or sporadically. Those who used it sparingly consumed margarine or spreads on a regular basis and used butter only for special occasions. For both groups, we noted that consumers appeared to fall primarily into 2 groups: butter-only consumers, and margarine-butter consumers. Individuals who consumed margarine on a regular basis quite often used butter for special occasions or for baking.

Many of the older participants (>65 yr) indicated that the negative health aspects of butter (high fat, cholesterol, and calories) were deciding factors in their purchase and consumption of butter. The younger group (24 to 40 yr) were generally not concerned with the health aspects of butter, and butter was viewed as about as healthy as margarine. The consensus among these consumers was that butter and margarine were best consumed in moderation. Similarly, participants in focus groups carried out by Wright (1991) preferred the taste of butter but were concerned about health issues associated with it. Likewise, Crane (1999) found that 69% of consumers surveyed over the telephone agreed that they preferred the taste of butter to margarine. Crane also found that 90% of participants said that concern over health influenced their butter vs. margarine purchase decision.

Although the consumers surveyed by Crane agreed (86%) that butter was more expensive than margarine, only 30% said that price influenced their purchase decision. In this study, many focus group subjects expressed a price in their purchase decision, as did a majority of the participants in our qualitative consumer test (60% of butter-only consumers and 72% of butter + margarine consumers; Table 4). Many participants in the younger group viewed butter as a natural product. Across both focus groups, most women indicated they preferred butter for its taste and texture, which was praised for its flavor. This observation is in contrast to previous studies using focus groups in which participants indicated that they used butter for everyday uses.
may not have accurately depicted the texture directly from integrated storage or how some consumers would temper products prior to use.

Consumption trends (from focus groups and consumer acceptance testing) suggested that butter and margarine use separates consumers into 5 categories: the majority—who use both butter and margarine or spreads, a smaller portion who use only butter, and a smaller segment who use margarine or spreads exclusively. The latter consumer group was not evaluated in this study. Butter-only and butter + margarine consumers could be further divided into 5 segments.

The largest number of butter-only users fell into the “traditional” butter-lower category (segment 1). The butter + margarine consumers were distributed throughout the 5 segments, with the largest percentage (37%) falling into segment 2, the “margarine-lower” category. This left more than 50% of butter + margarine consumers in the other categories, indicating that although they consumed margarines and spreads, they preferred butter. With the preferred taste and desirable natural image of butter, the latter group of consumers may represent an opportunity for manufacturers to increase butter purchase and use.

**CONCLUSIONS**

Butter was viewed by most consumers as a tasty and natural product. Factors that influenced their purchase decision were different for butter-only users and butter + margarine consumers. Acceptance of butter and spreads varied based on the type of consumer.

**Decisions or opinions formed based on the research results.**

Tip: Sometimes contains suggestions for further research needed on the topic.

**REFERENCES**

List of citations for all previously published research mentioned within the article.