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## Taste Profiles That Correlate with Soy Consumption in Developing Countries

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**Abstract:** While insufficient protein consumption is a concern to many demographic segments in developed countries, it is a greater concern in developing nations where the cost or availability of traditional forms of animal protein results in protein deficiencies. Soy is a low-cost, highly available protein source, yet it is largely overlooked because of its unfamiliar taste and texture. To determine how to best encourage soy consumption, a convenience sample of 132 Indians and Pakistanis living in the United States was examined for insights in to what characterizes someone who regularly eats soy for taste-related reasons. Three groups of consumers were analyzed, people who ate soy primarily for taste-related reasons, those who ate it primarily for health-related reasons, and those who did not eat it. People who ate soy primarily for taste-related reasons were found to be more likely to appreciate fine food, to live with a great cook, and to be more of an opinion leader than did those in either of the other two groups. These along with additional findings have implications for targeting soy-predisposed consumers, who will adopt soy for the long-term, and who can influence others because of their role as opinion-leaders within their peer or reference group.

**Key words:** Protein-deficiency, soy consumption, taste profiles

### Introduction

For consumers in many countries, a key issue is not whether they consume enough calories, but whether they consume the appropriate mix of calories. Shortages of meat-related protein can cause nutritional deficiencies even though total calorie consumption is at an appropriate level (Harper, 1999). While insufficient protein consumption is a concern to many demographic segments in developed countries, it is a greater concern in developing nations where the cost or availability of traditional forms of animal protein results in under consumption (Roberfroid, 1999). Soy is a low-cost, highly available protein source (Barnes, 1998). The problem, however, lies in encouraging acceptance among those who are hesitant or resistant to consume it (Shork, 2000).

Although perceptions that a food is nutritious can influence changes in behavior, such changes can be short-lived if immediate results are not seen or if the food becomes tiring or inconvenient (Logue, 1991). In contrast, when new dietary patterns are changed because of taste-related reasons, they have longer-term consequences (Nestle *et al.*, 1998). While some part of the population will adopt new foods into their regular diet simply because they are a healthy alternative, a much larger percentage will do so only if the taste of the product is equal or more preferable to what is currently being eaten (Coletta, 1999).

In trying to encourage people in a developing country to adopt a healthy protein alternative such as soy, it is useful to profile the type of people from that country who have already adopted the product. Doing so will provide insights in to how individuals with a similar profile can be targeted and encouraged to consume the product (Wansink

and Park, 2000). Consider two segments of people who frequently consume soy: One segment consumes it primarily because of its health benefits, while a second segment consumes it primarily because of its taste. If we can understand why some people like the taste of soy, it might be possible to determine what could be done to encourage more people to consume soy.

The objective of this study is to determine what taste-related profiles and behaviors are most closely related to people who claim to consume soy primarily because of its taste. Understanding this will help us better understand how to encourage consumption in similar segments of people. Because of the growing nutritional concerns in over-populated countries, we will focus on a segment of consumers with Indian or Pakistani roots.

### Materials and Methods

To determine what factors are associated with individuals who frequently consume soy, qualitative and quantitative phases were conducted. A qualitative study was first conducted with a non-representative sample of 33 people who had clear taste preferences for soy and who had been recruited through fliers placed in a health food store, a regular supermarket, a health food restaurant, and a college cafeteria. Two eight person focus groups were conducted, and in-depth laddering interviews were conducted with the remaining 17 participants.

The results of this qualitative phase of the project indicated that two major reasons people evolved from infrequent to frequent users of soy was because of either health-related reasons (lactose intolerant, heart disease concerns, blood pressure) or because they liked the taste and texture of soy. Since our interest was primarily in

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Table 1: Taste-related Profiles Associated with Indian and Pakistani Soy Consumers

Beliefs About Soy	Non-soy Consuming Segment	Health-related Segment	Taste-related Segment	F-Value (d.f. 2,130)
I live with (or am) an above average cook	3.9	4.8	5.5	6.6**
I live with (or am) a great cook	2.8	5.6	7.1	9.8**
I am traditional	5.6	5.7	4.5	5.3**
I appreciate fine food	4.9	5.7	7.9	6.9**
In general, I am an adventurous person	4.9	4.3	5.4	3.6*
I believe that I eat healthier than most	4.5	7.9	5.8	14.4**
I am an opinion-leader among my peers	3.2	5.6	6.8	9.4**
Number of evening meals eaten away from home during the average week	0.8	1.1	1.9	7.1**
Number of evening meals which contain a meat during the average week	6.3	5.8	6.0	0.7
Number of evening meals with which you drink wine during the average week	0.6	0.5	1.2	5.9*
Number of evening meals you eat a soy-related food during the average week	0.6	3.7	2.7	15.4**

\* $p < 0.10$  \*\*  $p < 0.05$

those who ate soy because of the taste, most of the qualitative work was focused on determining similarities among the “tasters”. In addition to spending more time preparing food and enjoying fine dining, this segment claimed themselves to be more adventurous and more likely to be considered an opinion-leader among their peers.

To examine these notions, we next conducted a study with a convenience sample of 132 Indians and Pakistanis who were residing in the United States and who were either graduate students, faculty, or spouses at the University of Illinois in Urbana-Champaign. After obtaining these names from the local phone book, seven minute interviews were conducted either in person or over the phone. These individuals were asked a series of questions related to how frequently they ate soy products as well as other food-related habits and preferences that had been identified in the qualitative portion of the study.

After screening for whether the person ate meat, each person was asked the number of times he or she was involved in specific target behaviors in an average week, and they were asked questions requiring them to respond as to whether they disagreed or agreed with a series of questions asked on 9-point scales (1 = disagree; 9 = agree).

### Results

In analyzing the data, consumers were grouped by whether they had indicated that they primarily ate soy for health reasons, taste reasons, or did not eat soy. This was determined by using both checked boxes (health, taste, neither), and by using 9-point Likert scales regarding why they ate soy (1 = strongly disagree; 9 = strongly agree). Of those 91 people who were frequent consumers of soy (2 or more times a week), 63 could be unambiguously categorized as eating soy primarily for health reasons

(69.2%) and 28 as eating soy primarily for taste reasons (30.8%). While some people ate soy for both taste reasons and health reasons, the more important or dominant reason was used to group these individuals. The taste-related segment consumed soy an average of 2.7 times each week, compared to the health-related segment who consumed it more frequently (3.7).

The taste profile of people who consumed soy for taste-related purposes was consistently different across many of the measured variables. To a large extent, this confirmed the findings of the qualitative portion of the study. This “taste-related” segment of consumers were more likely to believe they lived with a “great cook,” than the health-related segment or the non-soy eating segment (7.1 vs. 5.6 and 2.8;  $F_{1,130} = 6.6$ ;  $p < .05$ ). In addition, compared to these other segments, they rated themselves as less traditional (4.5 vs. 5.7 and 5.6;  $F_{1,130} = 9.8$ ;  $p < .05$ ), more appreciative of fine food (7.9 vs. 5.7 and 4.9;  $F_{1,130} = 6.9$ ;  $p < .05$ ), marginally more adventurous (5.4 vs. 4.3 and 4.9;  $F_{1,130} = 3.6$ ;  $p < .10$ ), and more likely to be an opinion leader (6.8 vs. 5.6 and 3.2;  $F_{1,130} = 9.4$ ;  $p < .05$ ).

As Table 1 indicates, in addition to these personality variables, this segment of soy “tasters” was more likely to eat evening meals away from home than were the health-related segment and the non-soy eating segment (1.9 vs. 1.1 and 0.8;  $F_{1,130} = 7.1$ ;  $p < .05$ ), and they were more likely to enjoy wine with their meal (1.2 vs. 0.5 and 0.6;  $F_{1,130} = 4.1$ ;  $p < .05$ ).

### Discussion

We often underestimate the power and importance that the meal preparer or gatekeeper can unknowingly play in establishing and modifying family preferences toward unfamiliar foods (Nestle *et al.*, 1998). The findings reported here underscore that a taste-related preference

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for soy can be a learned preference. That is, given the right circumstances - a great cook - the taste of soy can be one that people learn and grow to like.

While most efforts to change nutrition-related behaviors are focused on mass efforts to a general population (Nestle *et al.*, 1998), this study suggests two important considerations. First, there are some profiles of individuals or segments who are more predisposed to changing their consumption behavior in a desired direction than others. To focus nutritional education efforts on a general population will be much less effective than if these efforts are instead focused on a more targeted group. Second, in the case of soy, targeting a taste-oriented segment of consumers who prefer soy can seed potential opinion-leaders who may eventually filter down the influence of these dietary habits on other consumers.

Instead of focusing efforts on encouraging people to eat soy for health reasons, a more productive method may be to target the types of people who are more likely to prefer it for taste-related reasons. Past research suggests that people who eat foods for taste-related reasons are more likely to continue with these dietary changes than one who simply does so for health reasons (Wansink, 2002). Part of the importance that this "taste-related" segment claims to live with "great cooks" is that any exposure they have to soy is likely to be favorable. Repeated exposure is likely to develop preferences in a way that highly varied experiences will not.

How are these taste-predisposed segments located?. Table 1 indicates that these people are likely to believe they live with good cooks are more likely to exhibit behaviors associated with food appreciation, such as dining out and wine consumption. While such variables may not have practical analogues in a developing country, they do suggest that people who eat soy for taste-related reasons exhibit evidence of being more appreciative of quality dining experiences compared to their peer group. When extending these results to developing countries, the

results should be taken as somewhat exploratory because of the sample. This study was conducted with a non-representative sample of people who had emigrated from India and Pakistan. They were wealthier, better educated, and more Westernized than what would be expected in their home countries. Still, these results suggest important directions to consider when trying to introduce a healthy and unfamiliar protein source in to these cultures.

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