

experienced any GI symptoms within the week after eating the potato chip product.

The study was completed with 98 participants, the majority of whom had initially called to report that they had experienced diarrhea, loose stools, and/or abdominal cramping (61 percent, 16 percent, and 64 percent respectively). Approximately 48 percent of the participants described the symptoms that prompted their original call as severe. For nearly three-quarters of the participants, the amount of olestra chips consumed in the study was comparable to, or greater than, the amount associated with their initial call.

The petitioner found that during the study there were no significant differences following consumption of olestra chips, compared with consumption of triglyceride chips, in the frequencies of abdominal cramping (12 percent with olestra, 9 percent with triglyceride), diarrhea or loose stools (11 percent with olestra, 15 percent with triglyceride), gas (7 percent with olestra, 5 percent with triglyceride), or any other GI symptom (28 percent with olestra, 26 percent with triglyceride). Overall symptom severity ratings for all subjects were similar after consumption of olestra and triglyceride chips. The petitioner concluded that this study provided evidence that an episode that was initially reported to be an olestra-related effect was in all likelihood not olestra-related, and that there was no evidence of a population or subpopulation with a sensitivity to olestra. The petitioner suggested that these results indicate that initial calls made to the toll-free telephone line may reflect false attribution of symptoms to products made with olestra.

FDA found this study was adequately representative of the population who called the postmarketing surveillance system in terms of severity of initial symptoms and amount of olestra reportedly consumed prior to the initial symptom episode. FDA noted that while 98 participants were enrolled in the study, only 92 completed all 4 visits. The six dropouts were unrelated to olestra-related effects. Based on an analysis of the data in the study, FDA concluded that under the conditions of the study (two exposures of up to 2 oz of olestra-containing chips separated by at least a week), subjects eating olestra-containing chips were no more likely to report having had loose stools, abdominal cramps, or any other GI symptom compared to subjects eating an equivalent amount of triglyceride chips (Refs. 10 and 11).

2. Acute Consumption Study

P&G sponsored ²⁰ a study to determine whether there was a difference in the nature or frequency of GI symptoms experienced by subjects eating olestra chips compared to those eating triglyceride chips, ad libitum on a single eating occasion (Ref. 12). The study was a randomized, placebo-controlled, double-blind study in which 1,092 adults and teenagers who were provided with a 13 oz bag of potato chips (either olestra chips or triglyceride chips) in a plain, unlabeled white bag, consumed as many chips as they desired while viewing a movie. Participants were also provided a 32-oz soft drink of their choice. Participants were told prior to the test that they might experience temporary dry mouth, thirstiness, or digestive symptoms (such as gas, cramping, or loose stools), as they might with salty or high fiber foods.

Participants were instructed to be seated in the theater at least one seat apart from other participants, to eat and drink as much or as little of their chips and beverage as they desired, and not to share with anyone else. The theaters were monitored by several study staff during the movies. At the conclusion of the movie, participants clipped their bags of chips shut; noted the approximate amount of beverage consumed; and completed a brief questionnaire about product acceptance, satiety, and sensory attributes. Participants turned in the completed questionnaires and bags with uneaten chips and were given a toll-free telephone number to call if they had any questions or problems. Bags of chips were subsequently weighed to determine the amount consumed by each subject.

Trained telephone interviewers contacted study participants and administered a recall questionnaire to collect information on any effect experienced since the movie. All subjects were specifically asked if they had experienced any GI symptoms during or since the movie, and to specify those symptoms including the severity and timing of any such symptoms. The study protocol specified that participants be contacted within 2 to 4 days of viewing the movie. The petitioner reported that 85 percent were contacted within 2 to 4 days and a total of 97 percent were contacted within a week of viewing the movie.

The petitioner reported that the median consumption of olestra chips

was approximately 2.1 oz (approximately 16 g of olestra) ²¹ compared to about 2.7 oz of triglyceride chips. Overall chip consumption was similar across age groups, but males generally consumed more chips than females (median of 2.8 versus 2.1 oz, $p < 0.01$). The overall palatability of the triglyceride chips was rated slightly higher than the olestra chips, with a mean score of 6.4 versus 5.6 on a 9-point preference scale ($p < 0.01$). Regarding satiety, there were no significant differences between the groups as indicated by mean satiety scores of 5.9 versus 5.7 for triglyceride chips and olestra chips, respectively, on a 9-point scale, with 9 being "extremely full" ($p = 0.07$). Nor were any differences seen in beverage consumption, choice of beverage, or time since last meal prior to the movie between the two groups.

The petitioner attributed the lower chip consumption in the olestra group to the slightly lower preference for olestra chips reported by study participants. The petitioner stated, however, that the median consumption (2 oz) was more than a typical single-serving snack size bag of chips, and that approximately 100 participants ate more than 4 oz of olestra chips (approximately 32 g of olestra).

The petitioner reported that the proportion of subjects who reported GI symptoms after consuming olestra chips was not different from that after consuming triglyceride chips (15.8 percent and 17.6 percent respectively). There were no differences between the olestra and triglyceride groups in the frequencies for 14 different self-reported GI symptoms (gas, diarrhea, pain, cramping, upset stomach, loose stools, nausea, bloating, indigestion, aftertaste, eructation, constipation, vomiting, bloody stool), overall symptom severity for any GI event, nor time to onset or duration of symptoms. The petitioner also reported that consumption levels did not correlate with the rate of symptom reporting in either the olestra or triglyceride group.

The petitioner planned to have 1,400 participants in the study and anticipated symptom reporting to be 10 percent for the triglyceride group and 15 percent for the olestra group. Using these assumptions, the study would provide 80 percent power for detecting

²⁰ The principal investigator for the study was Dr. L. Cheskin, Dept. of Gastroenterology, Johns Hopkins School of Medicine.

²¹ In 1996, FDA estimated the probable life-time averaged intake of olestra at the 90th percentile to be 7.0 g/p/d. To evaluate subchronic conditions, FDA estimated that a "high" acute consumer of olestra (everyday for 12 weeks) would consume 20 g/p/d, equivalent to eating a 2 oz bag of potato chips every day, and the 99th-percentile single-day intake of olestra for the group consuming the highest level of savory snacks to be 45 g/d (61 FR 3118 at 3124).