

subjects' self assessments showed little or no impact of GI symptoms on subjects' daily life, and there was no increase in the percentage of reported severe impacts in the olestra group compared to the control group.

The petitioner also examined whether there were differences in the incidence of reported GI symptoms among the different age groups. The petitioner reported that there were no significant differences in total or specific GI symptoms between the olestra and triglyceride groups for children (2 to 12 years; n=885), teens (13 to 17 years; n=227), or the elderly (65 to 89 years; n=402), even among the highest consumers. This analysis showed that for adults (18 to 64 years; n=1667), there was an increased percentage in reporting the GI symptom gas in the olestra group compared to the control group. There was also an increase in the number of GI symptom days, and an increase in the number of more frequent bowel movement symptom days, among adult subjects eating olestra of approximately one symptom day out of the 42 days of the study.

Among adult females in the olestra group, compared to adult females in the control group, there was an increase of approximately one symptom day out of 42 days of the study with regard to more frequent bowel movements, gas, and any GI symptom. The only difference regarding reports of abdominal cramping was an increase in the control compared to the olestra group for adult males.

The petitioner concluded, based on the subjects' self assessments, that none of these reported increases in the number of symptom days were meaningful because there was no impact on subjects' daily activities. Based on its comparison of the percent of subjects who reported one or more GI events during the course of the study, P&G concluded that there were no meaningful or serious GI effects associated with eating olestra-containing chips.

At the end of the 6-week study, P&G asked participants which kind of chips they thought they were eating from the olestra-labeled bags. P&G reported that the percentage of subjects reporting GI symptoms was greater (approximately 50 percent) in those who believed they were eating chips made with olestra compared to those who thought they were eating triglyceride chips. This was true regardless of whether the participant was actually eating olestra or triglyceride chips.

FDA employed a number of statistical approaches to best address the different questions to be answered by the study,

and while such differing approaches may yield different answers, this varied approach provides a more complete picture of the study results. FDA analyzed both the temporal relationship between consumption and symptoms, and summation data for the study (Refs. 15 and 16).

Examination of temporal data is important for evaluating an association between olestra intake and GI symptoms. Such an analysis is also important because in a study of this length, subjects can modify their eating behavior based on their experience with a product. FDA found that subjects in both the olestra and triglyceride groups modified their intake of chips as a result of experiencing more frequent bowel movements. FDA was able to conclude that consumers modify their behavior based on their experience with olestra chips by examining the amount of chips consumed the day before, the day of, and the day after a report of more frequent bowel movements. Chip consumption decreased after experiencing more frequent bowel movements, although consumption of chips did not cease.

In order to understand the temporal relationship between olestra consumption and GI symptoms, FDA examined the frequency of GI symptoms for numerous different patterns of olestra consumption over a period of several days.²⁵ In all these analyses, FDA found that for men, olestra consumption resulted in an increase in any GI symptom, gas, and more frequent bowel movements, and a decrease in nausea. For women, olestra consumption resulted in an increase in any GI symptom, gas, looser stools, and more frequent bowel movements. On the day that chips were eaten, the difference in the percentage of occasions that more frequent bowel movements were reported for the olestra chips compared to the triglyceride chips was

²⁵ These included determining the percent of occasions for which GI symptoms occurred on the same day and the following 2 days of eating an olestra-labeled chip; comparing the frequency of occurrence of GI symptoms on days that olestra-labeled chips were eaten to days that chips were not eaten to determine a "same day of eating effect"; determining the percent of days on which GI symptoms were reported for all non-eating days in order to evaluate possible delayed or continuing effects of olestra; comparing the percent of days on which GI symptoms were reported to the number of consecutive days eating olestra-labeled chips in order to examine possible cumulative effects; for various GI symptoms analyzing the pattern of consumption of olestra-labeled chips for the days prior to the GI symptom in order to examine how the most recent day of eating and the frequency of eating is related to the GI symptom; for various GI symptoms, determining the amounts of olestra-labeled chips consumed on the day the GI symptom occurred (Ref. 16).

1.6 percent for males and 1.2 percent for females. These effects were seen on days of consumption of olestra chips but not on subsequent days on which olestra-containing chips were not eaten. When olestra chips were consumed on consecutive days there was some cumulative effect for the reports of these GI symptoms. This was particularly true for males. For example, the difference in the percentage of occasions that a report was made in the category "any GI symptom" for the olestra chips compared to the triglyceride chips increased from 0.9 percent on the first day to 1.7 percent on the second day, to 2.6 percent on the third consecutive day that chips were eaten and a complaint was recorded. There was also a trend for more frequent and recent consumption of olestra to result in a GI symptom. While increasing consumption of olestra and triglyceride chips both resulted in more symptoms, the effect of olestra was greater compared to triglyceride chips at all doses.

In examining the effect of olestra consumption on different age groups, FDA found that GI symptoms were primarily seen in the 18 to 64 age group. There were no olestra-related effects in the groups over 65 years or younger than 18 years.

In a separate statistical analysis, FDA focused on the sum total of symptom days and consumption of olestra-labeled chips over the course of the 42-day study (summation data). FDA analyzed the data for each GI symptom for both the entire study population, and for a population divided based on age and gender.

In the statistical analysis of the sum total of symptom days over the course of the 42-day study, FDA first examined the relationship between the reporting of particular GI symptoms and the consumption of olestra-containing foods by comparing the olestra group and the triglyceride group. FDA found that for all study subjects (males and females) over the course of the 42 day study, there was an increase of 0.28 more frequent bowel movement symptom days in the olestra group compared to the triglyceride group. FDA then examined the relationship between the reporting of particular GI symptoms and the consumption of olestra-containing foods by analyzing the olestra group and the triglyceride group separately by gender. FDA found for females in the olestra group, there was an increase in "any GI symptom" of 0.5 mean symptom days compared to the females in the triglyceride control. It was also observed that for females in the olestra group, there was an increase of 0.3 symptom days in more frequent bowel