



Frymaster's Protector[®] Fryer and Trans Fat-Free Oils Offer An All-Around Healthier Solution

■ EXECUTIVE SUMMARY

The foodservice industry is facing a serious health-based challenge to its longtime status quo. Consumer and government calls to regulate or outright ban trans fat presents a particular challenge for food manufacturers and the foodservice industry. Industry members are scrambling to find healthy solutions, as the clock ticks closer toward implementation dates banning the artery-clogging fat from restaurant menus coast to coast.

Recognizing its unique position to advise customers on the subject, industry leader Frymaster, commissioned research to document the business and customer-pleasing potential for healthier – yet cost effective – frying. Researchers compared Frymaster's new low oil-volume Protector[®] fryer against a popular "traditional" Frymaster fryer. In a French fry cook-off designed to simulate a quick service restaurant (QSR) environment, the Protector excelled on all evaluation criteria, including oil use and fry capacity, oil life and stability, and food sensory ratings. For example, while the traditional fryer's oil quality was maintained for 18 days; the Protector's oil quality had not reached the study protocol's cut-off threshold when the study was concluded after 27 days.

The research concludes that with the right inputs, oil and equipment, trans fat-free frying can be a win-win solution for cost-conscious foodservice operators and their health-minded customers alike. Paired with quality trans fat-free oils, the Protector fryer offers a cost-effective solution for operators who are seeking to respond to consumer and other demands for trans fat-free foodservice offerings. The fryer's oil savings can actually help underwrite the transition to healthier, but more expensive, trans fat-free oils. The Protector offers the further added value of industry-leading energy efficiency and labor-saving, oil-extending high technology features, offering operators healthier fried foods, *and* a healthier bottom line.

■ BACKGROUND

The National Restaurant Association ranks trans fats as "one of the most critical issues facing the restaurant industry today."¹ Harvard School of Public Health's famed Dr. Walter Willett describes them as "a metabolic poison that has no place in human diets."² Cities, counties, states and even the federal government are taking steps to ban or otherwise regulate them.

While naturally occurring in small amounts in meat and dairy products, the majority of dietary trans fats are artificially created by the process that makes partially-hydrogenated vegetable oils (PHVOs). Ironically, PHVOs first became popular with food companies and foodservice operators for frying and baking in the 1980s, as a healthier and more shelf-stable alternative to saturated animal fats. It now appears that trans fats pose an even greater health risk than saturated fats; trans fats actually raise so-called

"bad" LDL cholesterol, accelerating formation of artery-clogging plaques that contribute to cardiovascular disease and lower "good" HDL cholesterol that aids removal of cholesterol from the body.

With speed that has been described by some as bordering on hysteria, governments have taken action to protect residents from this health risk. New York City's Board of Health voted earlier this year to require all city restaurants to remove artificial trans fat from menus by July 1, 2008. Even the nation's first city of freedom, Philadelphia, has banned trans fat. Unable to legally ban trans fat, Los Angeles city leaders reached an agreement with the state restaurant association to voluntarily phase them out. Numerous foodservice operators and supermarket chains have announced they have or will soon remove trans fat from their menus, including QSR industry leaders McDonald's, Wendy's, Burger King and KFC. In 2006, the Food and Drug Administration began requiring

that the trans fat content of all foods be listed on food packaging's Nutrition Facts boxes – the first significant change in nutrition facts labeling since Nutrition Facts were first required in 1993.

As *U.S. News & World Report* recently wrote, “the war on trans fat is forcing companies to adapt or get out of the way.”³ Depriving consumers of their steadfast favorite fried and baked foods isn't an option. However, solutions don't come easy, or cheap. Not all oils have the ability to stand up to the high heat needed to crisp French fries. Those that do come with a higher price tag, a challenge for today's cost-sensitive operators.

Recognizing the value it could supply to its customers, industry leader Frymaster, sought to conduct research to document the business and customer-pleasing potential for healthier – and cost effective – frying. The company commissioned Allan Samson, Ph.D., president of ESCA Enterprises, Inc., and Barbara Rainey, Ph.D., of Barbara Rainey Consulting, to conduct comparative research.

■ METHODOLOGY

Samson compared Frymaster's new electric Protector fryer in a French fry cook-off against another popular Frymaster fryer, the E⁴ electric model RE14. The Protector fryer requires only 30 pounds of oil to fill while offering the same production capacity as a 50-pound fryer, and features an automatic oil replenishment feature. The RE14 is a “typical” 50-pound manual fill fryer.

Both the oil and the French fries were trans fat-free: Nutra-Clear NT™ high oleic, low linolenic canola oil from Bunge; and Gourmet Gold® shoestring French fries from Lamb Weston. To establish baseline measurements at the beginning of the study, fries and virgin oil samples were tested for total fat, saturated, polyunsaturated, monounsaturated and trans fats, while fries were also tested for moisture content. In addition, virgin oil samples were tested for peroxide value, free fatty acids and for color (the latter using the American Oil Chemists' Society's Fat Analysis Committee-established color scale.) The French fries were cooked according to a protocol that simulated a typical QSR operation. Oil filtration and frypot cleaning were performed daily at the end of the cooking day.

Oil quality was measured by the percent of total polar material (TPM), an indicator of the cooking-related breakdown of the oil's triglycerides into non-triglyceride materials. The study protocol stipulated that the oil's fry life would be concluded when the oil reached a TPM level of 24 percent. Oil samples were analyzed by an independent laboratory, as were the cooked French fries. Data generated were cross-tabulated and statistically analyzed to evaluate differences in measured variables.

Barbara Rainey Consulting's sensory panelists evaluated French fries for overall product liking, flavor intensity, crispness, color and moistness throughout the study's course.

■ FINDINGS

Highlights of the study's key findings follow.

Oil use and production capacity:

- When initially filled, the 30-pound Protector fryer took 40 percent less oil to fill than the 50-pound fryer, presenting substantial oil savings.
- Yet, the Protector cooked the same volume and quality of food as the larger RE14.

Oil life (see Figure 1):

- While a strong performer in its own right, the RE fryer's oil began deteriorating after

10 days, and reached the 24 percent TPM endpoint after 18 days.

- The Protector fryer's oil had not reached the 24 percent TPM endpoint when the study was concluded after day 27, a 50 percent increase in oil life compared to the RE fryer.
- The Protector fryer was more efficient at recovering TPM values when fresh oil was added than the RE fryer.

Trans fat content:

- The trans fat-free level of the oil remained stable in both fryers, and saturated fat levels increased similarly (though insignificantly).
- French fries absorbed similar trace amounts of trans fat from the oil in both fryers, though were still within industry standard levels and within the range to be labeled trans fat-free.

Oil stability:

- The Protector fryer produced significantly lower levels of free fatty acids, a marker of oil breakdown, than the

“Fried’ carries with it a connotation that this is really an unhealthy food. From everything that we've looked at, frying per se is not necessarily bad. The health effects are mostly going to be related to the trans fats, the type of fat that's used for frying. ... [I]f we don't consume too much of them, moderate amounts of fried chicken or fried fish actually I think can be perfectly healthy.”

*Walter Willett, MD, MPH, DrPH
Harvard School of Public Health⁴*

RE fryer, demonstrating the Protector fryer's ability to reduce oil degradation. (See Figure 2.)

- The Protector fryer produced significantly lower levels of peroxide than the RE fryer, another oil breakdown by-product that affects color, taste, and oil life.
- The Protector fryer maintained better oil color stability, a visual indicator of oxidation products in the oil, than the RE fryer.

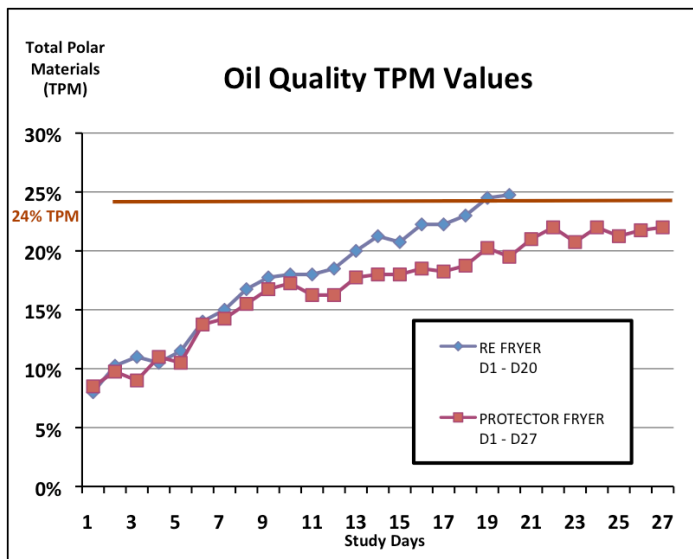
Sensory ratings:

- When the RE fryer reached 24 percent TPM, French fries from the Protector fryer were significantly more well-liked than fries from the RE fryer.
- The Protector fryer's French fries were rated "just right" in color throughout all the days of the study while the RE fries were "too light" on day 1, "just right" on days 4-18, and "too dark" on day 21.

DISCUSSION AND RECOMMENDATIONS

Today's foodservice operators are challenged to find trans fat-free frying solutions that have no to minimal bottom line impact. Trans fat-free oils are more expensive than PHVOs, and in some cases the supply of new trans fat-free oils simply isn't sufficient to meet demand being created by the trans fat-free movement. Some trans fat-free oils, such as soybean oils with higher linolenic acid content, degrade faster than oils with lower linolenic acid levels. The shelf life of frying oil is of significant

Figure 1: Oil Quality. While the RE-14 performed well on oil quality tests (as measured by TPM values), maintaining quality for 18 days, the Protector maintained oil quality through day 27.



economic importance; any extension of oil fry life can lower food costs, and food quality and consistency.

Researchers found that both the trans fat-free high oleic, low linolenic canola oil and the Protector performed

well. The canola oil's stability and sensory results were comparable to non trans fat-free oils. In addition to starting with a lower volume of oil (trans fat-free or not), the Protector is much more efficient in maintaining the oil's quality and extending oil life than its traditional

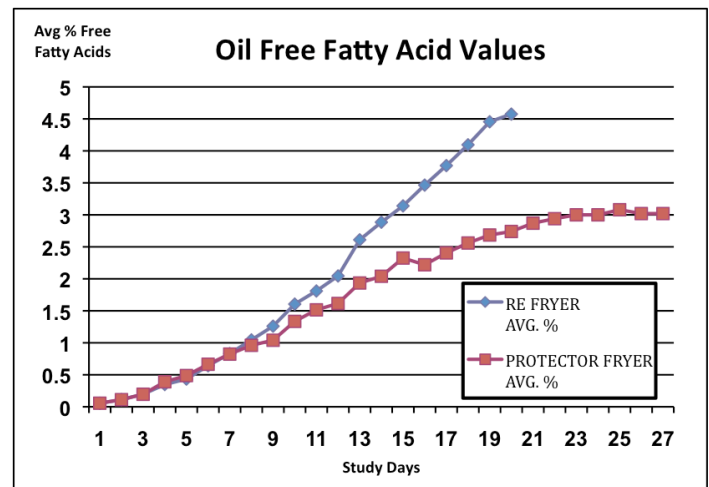


Figure 2: Free Fatty Acids as an Indicator of Oil Quality. Both fryers produced free fatty acids similarly for 10 days. After that point, the Protector produced less, reducing total free fatty acid levels 23%.

competitor. The Protector reduces the times per year that oil needs to be discarded and fryers need to be filled with fresh oil. Frymaster estimates that can generate oil savings of over 50 percent a year, a significant savings over the life span of the fryer – even more significant when the higher costs of healthier, trans fat-free oils are considered.

This study's findings suggest that, with the right inputs, oil and equipment, frying can be a cost-effective solution for budget-conscious foodservice operators. In addition, trans fat-free frying can be a healthy solution for operators and their fit-minded customers alike. Tools like the Protector fryer and quality trans fat-free oils offer a cost-effective solution for operators who are seeking to respond to consumer and other demands for trans fat-free foodservice offerings. The Protector offers the further added value of industry-leading energy efficiency and labor-saving, oil-extending high technology features. ■

¹ National Restaurant Association. SmartBrief Trans Fat Special Report, distributed via email March 28, 2007.

² Hellmich, Nanci. "Trans fats are not the only villains in American diets," USA Today, Feb. 22, 2007. Viewable online at <http://www.usatoday.com/news/health/2007-02-22-trans-fat-coverx.htm>.

³ Brandon, Emily. "Businesses Search for Trans Fat Substitutes," *U.S. News & World Report*, Jan. 4, 2007. Viewable online at http://www.usnews.com/usnews/biztech/articles/070104/4transfats_print.htm.

⁴ Culinary Institute of America. E-learning course, "The Trans Fat-Free Kitchen: Strategies for Foodservice Operators," 2007 "Fats & Oils in the Kitchen" chapter; Viewable online at <http://www.ciaprochef.com/transfatfree/>.