

Undergraduate Thesis Prospectus

Contested Oils: Social Divisions over Seed Oil Guidelines

(sociotechnical research project)

by

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General research problem

How have societal perceptions of nutrition in the U.S. evolved in response to emerging scientific research over time?

Eat this, don't eat that! One day, a food is hailed as healthy, the next, it is linked to chronic diseases. Navigating nutrition guidelines may feel overwhelming as the science surrounding nutrition evolves rapidly. However, this confusion is often exacerbated by conflicting messages from independent research and studies funded by food corporations.

Dominance in the food industry grants corporate companies an advantage, allowing them to easily influence consumers. A handful of large firms dominate multiple sectors, including meat, milk and dairy, groceries, and food processing sectors. In 1977, the largest four beef packing firms owned 25% of the market share. Fast forward to 2015, their percentage increased to 85% (Kelloway & Miller, 2019). Another example includes the merger of Kraft and Heinz, which formed a firm worth over US\$100 billion (Clapp, 2022). This market dominance shapes societal views on nutrition by influencing what foods are available, affordable, and promoted. Companies such as Mars Inc., a leading global food manufacturer, have funded research that highlights the health benefits of specific ingredients, like cocoa flavanols, to create favorable narratives around their products. Although the research is legitimate, Mars strategically omitted key details about how chocolate processing diminishes flavanol content, leading consumers to associate their products with health benefits that may not apply (Nestle, 2016). Understanding how societal perceptions of nutrition are shaped— not only by emerging scientific research but also by the influence of corporate interests— is essential to developing accurate nutrition guidelines and public health information.

Contested Oils: Social Divisions over Seed Oil Guidelines in the United States

How have U.S. social groups divided over public guidelines governing seed oils?

Seed oils like canola, cotton, soybean, corn, and sunflower are widely used in food production and have become central in debates about health and nutrition. Supporters argue that these oils, which contain unsaturated fats, can promote heart health by replacing saturated fats found in foods like butter and meat. Some studies suggest that unsaturated fats can improve cholesterol levels, which is beneficial for reducing the risk of coronary heart disease (CHD) (Harris et al., 2009). Public health organizations, such as the American Heart Association (AHA), recommend including seed oils as a balanced diet for this reason (Harris et al., 2009). However, other research warns that eating too much of these oils may have health risks. A study by Abraham & Hillyard (2024) suggests that consuming large amounts of seed oils, particularly those high in linoleic acid, can lead to atherosclerosis and CHD.

These conflicting perspectives have led to a divide among experts, consumers, and advocacy groups. While some emphasize the benefits of seed oils, others push for natural alternatives like olive oil or coconut oil. These disagreements have social implications, as they influence public health guidelines, food labeling, and consumer behavior. As policymakers seek to develop clearer guidelines, they must navigate both the scientific evidence and the social tensions that surround seed oils.

Seed oils became prominent in the American food industry in the late 19th and early 20th centuries (Maclay et al., 1963). Cottonseed oil was one of the first seed oils to be used in processed foods. Procter & Gamble (P&G) played a significant role in popularizing cottonseed oil for culinary use by launching the first all-vegetable shortening made from hydrogenated cottonseed oil, Crisco, in 1911 (Pendleton, 1999). At a time when consumer distrust of

cottonseed oil was high, P&G rebranded the oil, framing it as a “pure” and modern alternative to animal fats (Pendleton, 1999). This campaign marked a turning point, as it introduced industrially processed seed oils into American diets.

The rise of seed oils in the food supply coincided with emerging dietary recommendations that promoted these oils over animal fats. This shift was partly driven by the “diet-heart hypothesis,” introduced by researcher Ancel Keys in the 1950’s. Keys’ hypothesis linked saturated fats, found in animal products, with increased heart disease risk, recommending instead polyunsaturated vegetable oils (Teicholz, 2022). When Keys joined the AHA nutrition committee in 1960, he influenced the organization to endorse his view despite limited supporting evidence at the time. This recommendation became highly influential, leading to its adoption in U.S. dietary guidelines by 1980 and later the World Health Organization (Teicholz, 2022). Significantly, P&G provided the AHA with a substantial donation in 1948, equivalent to around \$20 million today. According to the association’s own official history, “The P&G funds were the ‘bang of big bucks’ that ‘launched’ the group” (Teicholz, 2022).

Research on seed oils presents a range of findings, with studies both supporting and questioning their health effects. Animal studies have raised concerns, showing potential risks associated with high intake of seed oils. For example, mice fed a high corn oil diet exhibited increased mammary tumor growth (Moral et al., 2016). In this study, mice fed diets with 1% linoleic acid, found in seed oils, developed significantly larger tumors than those fed 1% oleic acid, found in animal fats and natural oils. Similar diets with corn and safflower oil were found to stimulate colon tumor growth in rats, potentially due to the omega-6 fatty acid, linoleic acid (Abraham & Hillyard, 2024; Reddy & Maeura, 1984). DiNicolantonio and O’Keefe (2018) argue that omega-6 vegetable oils, through their oxidative effects, contribute significantly to the risk of

CHD. According to their study, by promoting the oxidation of low-density lipoprotein (LDL) particles, omega-6 vegetable oils trigger inflammation and atherosclerosis (the buildup of fats, cholesterol, and other substances in and on artery walls).

On the other hand, Harris et al. (2009) found that consuming omega-6 polyunsaturated fatty acids (PUFAs), particularly linoleic acid, at 5-10% of total energy intake may reduce CHD risk. Another study, by Bosetti et al. (2002), found that higher intake of sunflower, maize, and peanut oil was associated with a reduced risk of ovarian cancer, with women in the highest intake group having an odds ratio of 0.60 compared to those with lower intake levels. Lastly, Prater et al. (2022), found that an 8-week diet enriched with cottonseed oil led to significant reductions in fasting cholesterol levels— including total, LDL, and non-high-density lipoprotein (non-HDL) cholesterol— compared to olive oil in adults with high cholesterol. Note that LDL is known as the “bad” cholesterol because elevated levels can cause cholesterol to accumulate in the arteries and HDL is known as the “good” cholesterol because it helps transport cholesterol to be processed and eliminated (MedlinePlus, 2024).

Several key organizations play significant roles in the debate over seed oil guidelines in the U.S., each bringing distinct perspectives and agendas to the discussion. The AHA, “the nation’s oldest and largest voluntary organization dedicated to fighting heart disease and stroke,” advocates for the inclusion of seed oils in a healthy diet (AHA, n.d.). They support the consumption of seed oils rich in unsaturated fats, stating that replacing saturated fats with unsaturated fats lowers the risk for heart disease (Williamson, 2024). They also recommend using the following cooking oils: canola, corn, olive, peanut, safflower, soybean, sunflower, and vegetable (American Heart Association, 2023). Lastly, the AHA advances its agenda by funding research to support its dietary recommendations. Through science advisories like Harris et al.

(2009), the AHA leverages scientific evidence to advocate for seed oils as part of a heart-healthy diet.

The American Society for Nutrition (ASN)'s mission is to “advance the science, education, and practice of nutrition” and envisions “a healthier world through evidence-based nutrition” (ASN, n.d.). One of ASN's articles by Grabler (2024), references a study published by ASN and written by Voon et al. (2024) that supports the claim that “vegetable oils rich in monounsaturated and polyunsaturated fatty acids, such as canola and rice bran oil, have desirable effects in reducing total cholesterol and LDL cholesterol concentrations.” ASN also highlights research suggesting that cottonseed oil may have superior lipid-lowering effects compared to olive oil, particularly for individuals with high cholesterol (Beerman, 2022). Through partnerships with major food companies, including the globally leading vegetable oil producer, Cargill, ASN gains substantial sponsorship to fund studies and publicize findings that align with its pro-seed-oil stance (Simon, 2015).

Contrasting these two organizations, the Seed Oil Free Alliance (SOFA) advocates for reducing or eliminating seed oils from diets. Their mission is “advocating and advancing the availability of seed oil-free food options through trust, transparency, and education” (SOFA, n.d.a). They promote alternatives— including butter and ghee; tallow and other animal fats; and oils from avocado, coconut, olive, algae, or fermentation— by providing certification for products free from seed oil (SOFA, n.d.b). The certification process is designed to support companies that choose to replace highly refined seed oils with what the alliance deems healthier options. The Seed Oil Free Certified seal is used to assist “consumers in choosing seed oil-free foods by eliminating the guesswork” (SOFA, n.d.c). The SOFA argues that the pervasive use of seed oils

in processed foods contributes to a significant proportion of daily caloric intake, raising concerns about potential health risks.

Lastly, Sweetgreen, a national restaurant brand committed to “building healthier communities by connecting people to real food”, has taken a step in this debate (Sweetgreen, n.d.). The company announced a switch from sesame and sunflower oils to using only extra virgin olive oil (EVOO) for cooking all proteins, vegetables, and grains across its menu (Business Wire, 2023). In the same article, Co-founder Nicolas Jammet stated that they “take into account how every ingredient is prepared, down to the oil it’s cooked in,” reflecting Sweetgreen’s commitment to high-quality ingredients. By moving away from seed oils, Sweetgreen actively advances the anti-seed oil agenda by promoting and adopting alternatives preferred by advocates of reduced seed oil consumption.

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