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Commentary

Authentication of Plant-Based Food Processing on Frying Techniques

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DESCRIPTION

Essential sources of nutrients including vitamins, minerals, and fibre are plant-based diets. Plant foods are categorized as very perishable foods because they have a moisture content that is exceedingly high (more than 80%). According to several studies, farmers lost between 30% and 40% of the value of their plant-based goods before selling them to the ultimate customer. Plant-based meals might lose less when properly processed and stored. Dehydration has traditionally been thought of as the best way to preserve plant foods in order to maintain nutrients and prevent quality degradation [1]. Foods made from plants are frequently processed and preserved using heat treatments like drying or frying. To treat or preserve food, deep fat frying is frequently employed in residential and industrial cooking. Foods with unique sensory and organoleptic qualities Foods are immersed in oil at 120°C to 200°C during this procedure, sometimes referred to as atmospheric frying or immersion frying. This frying process permits physical and chemical changes such shrinkage and swelling as well as starch gelatinization, which results in bigger starch granules, crusts development, which causes the surface of the fried product to dry out, and flavour component production [2]. At the macro and micro levels, these physical and chemical changes lead to structural adjustments. Findings point to the relatively high oil content of fried foods as one of the main problems, which has been connected to an increase in illnesses including cancer, heart disease, obesity, diabetes, and high blood pressure. In addition, fried meals are far more likely to create acrylamide if the oil level surpasses 50% by weight. In addition, high temperatures during this frying procedure raise the dangers of acrylamide generation, oil oxidation, and nutritional loss. As a result, oil absorption has emerged as one of the most crucial aspects of quality for fried meals, and consumers now pay greater attention to it when making fried food purchases [3].

The rising desire for healthier fried meals with lower fat contents has emerged as one of the hottest study areas, which has significantly increased the quantity of research on oil absorption during the frying process. The Swedish National Food Authority discovered a significant quantity of acrylamide in several carbohydrate-rich processed foods, including potato chips and French fries, in April 2002, more than 20 years ago. As a result of the accumulating evidence of acrylamide's harmful health effects, there has been a major rise in worry over its presence in fried meals. The synthesis of acrylamide increases noticeably as frying temperature rises because it is particularly sensitive to that temperature. The presence of carbohydrates and the amino acid asparagine causes plant-based foods to produce a significant amount of the carcinogenic compound acrylamide when heated to high temperatures (over 120°C). Researchers looked into how acrylamide developed in potato chips made under various processing conditions and how it related to the frying temperature [4]. The study found that after 7 minutes of frying at 150°C, acrylamide levels for potato chips were around 500 g/kg, compared to nearly 4500 g/kg after 3.5 minutes at 190°C. In addition to frying temperature, other factors that directly affect acrylamide generation include frying duration, contact surface area with oil, and the interaction between raw materials and oil. The quality, flavour, and nutritional value of the food that customers today buy are important to them as they dine out more frequently. This growing consumer health consciousness has spurred more study into making fried meals that are wholesome and secure. In order to provide healthier fried foods with reduced oil absorption while maintaining the same organoleptic and sensory features as traditional frying methods, the food processing industries are thus aiming to use novel frying technologies [5].

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