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“VEGETABLE CULINARY PRACTICES OVER THE WORLD”

Editorial

Culinary Strategy: Healthy World Produce Traditions

In the face of mounting diet-linked chronic diseases, public health experts are urging us to dramatically increase our consumption of produce. As culinary educators, we approach such a challenge by first considering strategy.

When rethinking the American diet, where produce has traditionally played a secondary role, it is useful to look to other cultures for inspiration, especially at a time when Americans are increasingly demonstrating an unprecedented interest in new culinary tastes.

From the Mediterranean to Asia and Latin America, traditional cuisines have often been more plant-based, including a higher component of vegetables and fruits. As a result, home cooks from Italy and Greece to Mexico, Thailand and India have invented over the centuries a more sophisticated and complex “produce kitchen” than what we find in the U.S.

Tapping into this culinary genius is exactly the idea behind a new partnership between The Culinary Institute of America and the Produce for Better Health Foundation called Produce First! An American Menus Initiative. Once a year we bring leaders in American volume foodservice together to experiment with and be inspired by produce traditions as diverse as Spanish, French Provençal, Vietnamese, Moroccan, Turkish and Peruvian.

If we are to be successful in boosting produce consumption, it is not enough to popularize more ideas for good tasting, healthy foods. No, these ideas must be what we call in foodservice “craveable”. And for this, it is hard to imagine having more success than looking to these world produce kitchens for the kind of “block buster” concepts that will win the hearts and appetites of consumers.

Greg Drescher

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Cultural shifts in shopping habits, cooking skills and food preparation

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The health benefits of fruit and vegetables are well documented, but the barriers to increasing their consumption still remain a challenge. One such barrier is that they are reportedly time-consuming to prepare and consequently, people may feel that they do not have the skills in order to create meals 'from scratch'¹. This article explores some of these issues by drawing on recently published work on cultural and culinary practices in Southern France and Central England, proposing links with obesity.

Cross-cultural Culinary practices

Food choices diverge throughout Europe and socio-cultural determinants are known to influence these patterns. Due to changing working patterns, particularly for women, responsibilities for food related activities in the home have changed, resulting in a 'de-skilling' of certain food preparation tasks in favour of 'convenience'. Termed in the UK as a 'cooking skills transition'², this may contribute to the nation's increasing obesity prevalence. The food culture in France, on the other hand, has been long established as a social and convivial entity, although some changes are apparent.

Southern France has been shown to have a healthier diet than central England³ including the intake of fruit and vegetables. In the south, however, it seems that younger people are departing from this traditional healthy 'Mediterranean model'⁴ in favour of American-style 'convenience' and fast food. Further investigation of these 2 countries has demonstrated different attitudes and beliefs to food and health: the Southern French being more prepared to make time for cooking and attach more value to cooking from 'raw ingredients' than central England⁵ and this appears to be more marked in older generations, which concurs with the above study⁴.

A comparison of the cultural aspects of meal patterns and cooking practices has highlighted some interesting contrasts between these two geographical areas⁶. Eating together as a household, preparation of meals, food purchasing patterns, cooking practices and eating-out patterns were investigated for this purpose, using responses to a postal questionnaire consisting of 826 central English subjects and 766 Southern French subjects, aged 18-65 years. Analyses were conducted on samples standardised for socio-demographic differences. Some key results are presently summarised and discussed.

Eating together as a household and mealtimes

More French than English respondents reported eating together as a household on a daily basis. Similarly the French were more likely to follow a regular meal pattern of three meals a day. This supports the pleasurable aspects of eating⁵ being important values for the French

and, that traditional practices are being replaced by new structures in the UK, based on 'convenience'.

Cooking habits and food preparation

More French respondents reported that they cooked a meal from raw ingredients on a daily basis than the English, who tended to use ready-prepared and take-away meals more often. This supports changing structures, not surprising as the British population consumes more 'convenience' food than any other in Europe. It also, perhaps, highlights the pride associated with the French cuisine. More females in both countries were responsible for food purchase and preparation of meals, which suggests a persistence of gender differentiation within the domestic setting with regard to food provision⁷. This was particularly defined in France for cooking meals 'from scratch', which highlights 'convenience' as being more prominent in England and may accentuate the 'cooking skills transition' previously described².

Snacking

Energy dense snack food items, such as crisps and confectionary were consumed more often by the English, which is perhaps not surprising as subsequent investigations have found them to be more widely available for purchase in Central England than Southern France⁸. Similarly, availability of fruit and vegetables was found to be comparable between the two countries suggesting that this is not necessarily a barrier to their consumption in England⁶. These latter findings demonstrate the impact of the food environment on obesity, and are alarming, as energy density is associated with obesity and increasing fruit and vegetable consumption is thought to enhance weight management efforts⁹. Attention needs to focus on the way certain foods are marketed and advertised, with particular reference to their impact on cooking skills in the UK. There is also a requirement to ensure that in France, maintenance of traditional cooking practices is encouraged.

In conclusion, some of the findings from this study confirm popular stereotypes of French and English food cultures. The cultural differences, particularly cooking 'from scratch' and 'convenience' may partly explain the higher prevalence of adult obesity in England than France. Public health practitioners need to include cooking skills into their frame of reference when developing interventions and policies to increase fruit and vegetable consumption. Internationally, the dissemination of information relating to the cultural contexts of obesity needs to become a key feature for policy makers and professionals alike. Without such due consideration, the obesity epidemic will continue to escalate throughout Europe.

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Potential Health Effects of Pan Fried Vegetables in Virgin Olive Oil Following the Mediterranean Traditional Culinary Practice

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Frying is a very old cooking technique, used as early as 1600 BC by the ancient Egyptians and later by the Greeks and the Romans¹. Frying improves the sensory quality of food by forming aroma compounds, and providing attractive color, crust and texture. As a result of their unique and delicious sensory characteristics, fried foods are consumed worldwide with sustainable popularity, despite their considerable fat content and the consumers' awareness of the relationships between food, nutrition and health².

Olive oil and vegetables hold a key position in Mediterranean diet, the central elements of which are variety, reduction of saturated lipids and animal proteins, emphasis on olive oil and an abundance of vegetables, fruits, grains and legumes³.

Pan-frying of vegetables, such as potatoes, green peppers, zucchini, eggplants- in olive oil is a common practice in the Mediterranean olive oil producing countries. Vegetables are normally fried as they are, although sometimes eggplants and zucchinis are blanketed with flour or batter prior to frying. The fried vegetables are either served as starters, or used as ingredients in other Mediterranean recipes (eg mousaka).

Research has indicated that, contrary to common belief, frying appears to have the same or even less effect on nutrient and vitamin losses compared to other cooking methods^{4,5}, while the nutritive value of food may increase due to the absorption of frying oils, which are usually rich in unsaturated fatty acids and vitamin E.

Virgin olive oil (VOO) holds a unique position among cooking oils and fats, being very rich in monounsaturated fatty acids and containing significant amounts of health-promoting micro-constituents like tocopherols, polyphenols, terpenic acids, squalene and phytosterols.

Monounsaturated fatty acids are considered as potentially beneficial for cardiovascular heart disease risk reduction.

Tocopherols are considered as the most important lipid phase natural antioxidants, which prevent lipid peroxidation in membranes and lipoprotein particles.

Polyphenols are known to possess antioxidant capacity with respect to oxidative alterations and have been associated with lower risk of coronary heart disease, some types of cancer and inflammation.

Olive oil's terpenic acids -oleanolic, maslinic and ursolic- have been

reported to exhibit hepato-protective, anti-inflammatory and antitumor action.

Squalene, together with phenolic compounds and oleic acid appear to confer the anti-inflammatory properties and may contribute to the reported anti-carcinogenic activity of olive oil, especially for colon cancer.

Plant sterols are considered as important dietary components for lowering LDL cholesterol and maintaining good heart health, and they possess anti-cancer, anti-inflammatory and antioxidant activities.

During controlled pan-frying experiments of vegetables in VOO under household conditions, it was shown that a significant fraction of these substances survive and enrich the fried vegetables, thus becoming part of our diet^{6,7}. More specifically it was documented that, despite differences in size, shape, texture and culinary practice, the pan-fried vegetables:

- were enriched in monounsaturated fatty acids, having a healthy fatty acid profile and low atherogenic and thrombogenic indices⁶
- contained 70-350 times more α -tocopherol than the fresh vegetables⁷
- contained 4-13 times more VOO originating polyphenols—mainly tyrosol- compared to the raw vegetables⁶
- were enriched in olive oil's terpenic acids (oleanolic, maslinic, and ursolic acids)- which were not present in raw vegetables- in concentrations ranging from 2.1-6.8 mg/100 g of fried food⁷
- contained 2-3 orders of magnitude more squalene compared to the raw vegetables⁶
- were enriched in phytosterols in relation to the uncooked vegetables⁶.

Furthermore, it was calculated^{6,7} that a serving of vegetables pan-fried in VOO provides a significant portion of the daily intakes of these microconstituents, contributing to the intake of oleic acid, vitamin E, polyphenols, terpenic acids, squalene and plant sterols in the Mediterranean diet.

In conclusion, pan-fried vegetables as part of a balanced diet have a place in the diet, when done with virgin olive oil used for no more than two or three times for frying.



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Preserved and non-preserved vegetables: Differing associations with nasopharyngeal carcinoma

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Nasopharyngeal carcinoma (NPC) is a rare form of cancer in most regions of the world. The incidence of NPC is dramatically higher in selected regions, however, such as in Southern China and in Hong Kong¹. Elevated rates of occurrence are also seen in other parts of Southeast Asia¹.

One risk factor for NPC is being infected with the Epstein-Barr Virus (EBV)². However, this is such a common infection among most human populations that there are likely to be “triggers” that contribute to the cancer-causing effects of EBV infection. This has led to hypotheses that dietary factors could potentially play a role in this regard. For example, intake of Cantonese-style salted fish has consistently been found to be associated with an increased risk of NPC³. Cantonese-style salted fish contains high levels of volatile nitrosamines produced during the preservation process that have been shown in animal and laboratory studies to be both mutagenic and carcinogenic.

Preserved vegetables: a risk factor?

Although protective associations between fresh fruit and vegetable intake and many malignancies have been observed, the consumption of preserved fruits and vegetables have aroused suspicion as another dietary factor that may contribute to the risk of NPC. By preserved vegetables, we refer to produce that has been salted, dried, canned, fermented, or pickled. It is conceivable that the process of preservation could result in the production of cancer-causing agents. The preservation processes used to prepare these types of vegetables are also thought to increase the levels of carcinogenic nitrosamines⁴.

A review of the epidemiologic evidence showed that when compared to individuals who consumed the least amount of preserved vegetables, those who ate the most had double the risk of NPC⁵. When looking at types of vegetables, a similar magnitude of association was seen for green leafy vegetables, all non-starchy vegetables, and cruciferous vegetables. Furthermore, there was a dose-response trend, with a higher risk of NPC for greater amounts of preserved vegetables consumed⁵.

The increase in NPC risk with the intake of preserved vegetables is biologically plausible based on the higher concentrations of nitrates and nitrosamines associated with the preservation processes. Nitrosamines are known mutagens and animal carcinogens that induce the formation of DNA adducts which, if not repaired, may lead to point mutations and a greater likelihood of cancer.

Fresh vegetables: protective factor?

For non-preserved vegetables, highest-versus-lowest categories of consumption in adulthood were associated with an approximate 40% decrease in the risk of NPC⁵. Dose-response trends were not consistently observed, but were present in the majority of studies that reported these findings. A protective association of similar magnitude was also seen in groups of types of vegetables (green leafy, non-starchy roots and tubers, all non-starchy vegetables)⁵.

The inverse association between non-preserved vegetable intake and NPC risk is consistent with what is known about the protective effect of vegetable intake on the development of cancer of other types. The protective effects of vegetables are thought to be mediated by multiple components, including beta-carotene, alpha-tocopherol, retinoids, phytoestrogens, and folate. These components are involved in numerous biological processes that may alter cancer risk, including the inhibition of cell growth, the normal synthesis and methylation of DNA, and protection against oxidative stress and DNA damage.

Conclusions

Currently, the evidence indicates that preserved vegetable intake increases NPC risk whereas eating fresh vegetables reduces NPC risk. Both of these associations are strong, appear not to be specific to any type of vegetable, and the observations across studies have been consistent. However, because studies have not accounted for consumption of both types of vegetables in the same analyses, it is difficult to draw definitive links. This is because we do not know if eating fresh vegetables actually protects against NPC, or it merely acts as a marker of eating less preserved vegetables. Similarly, we do not know if eating preserved vegetables increase NPC risk, or distinguishes those who eat less fresh vegetables.

While it will be important to clarify these issues, the present evidence suggests a complex role between vegetable consumption and NPC: fresh vegetables are associated with substantially reduced risk of disease, whereas vegetables that have been preserved in specific ways may actually increase NPC risk. These findings are most relevant to countries in Asia where preserved vegetables comprise a substantial portion of the diet. This differing pattern of associations based on preservation raises the broader issue that certain preservation techniques may be so potent that they are capable of transforming vegetables from health-enhancing factors to factors that actually contribute to the pathogenesis of disease.

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