popcorn

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Cruising Review

Popcorn: Publications and Research from SwissMixIt

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Popcorn, one of the most popular snack foods in the world, is known for being a high fiber, healthy food. Our research has found that commercial popcorn also contains significant amounts of the class of antioxidants known as phenolic acids. Furthermore, the popping process was found not to significantly decrease the antioxidant capacity. These results indicate that a considerable amount of the bound polyphenols are bioaccessible. Due to the high levels of bioaccessible polyphenols, popcorn may be a significant source of dietary polyphenol antioxidants. The major difference between popcorn and other maizes is that the pericarp (skin) of the popcorn is much harder and not as porous as the pericarps of other types of maize.

PDF Version of the webpage (first pages)

Popcorn Botanical Information

Popcorn, one of the most popular snack foods in the world, is known for being a high fiber, healthy food. Our research has found that commercial popcorn also contains significant amounts of the class of antioxidants known as phenolic acids. Furthermore, the popping process was found not to significantly decrease the antioxidant capacity. These results indicate that a considerable amount of the bound polyphenols are bioaccessible. Due to the high levels of bioaccessible polyphenols, popcorn may be a significant source of dietary polyphenol antioxidants. The major difference between popcorn and other maizes is that the pericarp (skin) of the popcorn is much harder and not as porous as the pericarps of other types of maize. Popcorn, polyphenols, antioxidant capacity, Zea mays L., pericarp, Folin–Ciocalteu, FRAP, glyphosate

Keywords: Popcorn, polyphenols, antioxidant capacity, Zea mays L., pericarp, Folin–Ciocalteu, FRAP, glyphosate
Description and Research Abstract: Popcorn, one of the most popular snack foods in the world, is known for being a high fiber, healthy food. Our research has found that commercial popcorn also contains significant amounts of the class of antioxidants known as phenolic acids. Furthermore, the popping process was found not to significantly decrease the antioxidant capacity. These results indicate that a considerable amount of the bound polyphenols are bioaccessible. Due to the high levels of bioaccessible polyphenols, popcorn may be a significant source of dietary polyphenol antioxidants. The major difference between popcorn and other maizes is that the pericarp (skin) of the popcorn is much harder and not as porous as the pericarps of other types of maize. It is this property which allows the popcorn to pop when heated as the water inside turns to steam and the hull bursts. The skins of fruits and vegetables are known to have more polyphenols than the fruit inside. Since the hull or pericarp is so much denser in popcorn than in other maizes, popcorn should contain significant amounts of polyphenols. On average, the pericarp of the raw popcorn kernel contains 98.3 percent of the total phenolic content and 97.8 percent of the antioxidant capacity of the entire kernel. Thus, the popping process does not appear to degrade the phenolic compounds originally present in the kernel. However, when extracted through in vitro digestion, the popped kernels had significantly more antioxidant capacity compared to raw kernels. Generally it is thought that cooking or thermal processing breaks down the cell wall, thus freeing any bound phenolic compounds. This would lead to increased extraction, especially for enzymatic digestion as we observed. Thus, the reduction of risk of diabetes, heart disease and hypertension may accrue from consuming ferulate in whole grains such as popcorn. However, it is crucial that the entire kernel be consumed. Corn bran is among the highest antioxidant food in existence. The popping process does not have any substantial effect on the phenolic content in popcorn, making it an ideal source of unprocessed grains and polyphenols. In fact, popcorn eaten plain and air popped is the only food that is 100% whole grain by weight.

Popcorn exerted a stronger effect on short-term satiety than did potato chips as measured by subjective ratings and energy intake at a subsequent meal. This, combined with its relatively low calorie load, suggests that whole grain popcorn is a prudent choice for those wanting to reduce feelings of hunger while managing energy intake and ultimately, body weight.

These results indicate that a considerable amount of the bound polyphenols are bioaccessible. Due to the high levels of bioaccessible polyphenols, popcorn may be a significant source of dietary polyphenol antioxidants.

Many phytonutrients seem to be able to combat the effects of oxidants which may lead to chronic diseases. Among them, anthocyanins have been studied for a long time, and different types of functional foods rich in these pigments are already available on the market. In particular, wine, berries and various cereals have already aroused consumers' awareness, and in this context we propose a new and attractive healthy food: purple popcorn. Popcorn is the most popular American snack, now well known all over the world. A corn rich in anthocyanins, suitable to be transformed into a snack, could help to introduce healthy antioxidant compounds into the diet of many people, contributing to the prevention of chronic diseases.

After an outbreak of severe lung disease among workers exposed to butter-flavoring chemicals at a microwave popcorn plant, we determined whether or not lung disease risk declined after implementation of exposure controls.

Bronchiolitis obliterans, an irreversible lung disease, was first associated with inhalation of butter flavorings (diacetyl) in workers at a microwave popcorn company.

Patients with diverticular disease are frequently advised to avoid nuts, corn, popcorn and seeds to reduce the risk of complications. However, there is little evidence to support this recommendation. During 18 years of follow-up, there were 801 incident cases of diverticulitis and 383 incident cases of diverticular bleeding. We found inverse associations between nut, and popcorn consumption and the risk of diverticulitis. No associations were seen between corn consumption and diverticulitis, or between nut, corn, or popcorn consumption and diverticular bleeding or uncomplicated diverticulosis. In this large, prospective study of men without known diverticular disease, nut, corn and popcorn consumption did not increase the risk of diverticulosis or diverticular complications. The recommendation to avoid these foods to prevent diverticular complications should be reconsidered.

The levels of glyphosate in finished food products were generally higher than those in the fresh corn. The processing steps may be increasing the concentration of glyphosate, or the finished food products were made from corn with higher glyphosate levels.

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