

Quality of Kumara (*Ipomoea batatas*) Fried in Vacuum Frying and Conventional Frying Systems

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Popularity of fried foods has increased greatly over the years because of the unique sensory characteristics of fried foods. However, numerous health issues are associated with the increased consumption of fried foods, including the increased level of dietary fat intake and the presence of acrylamide in the fried food, a potential carcinogen. Vacuum frying is considered a potential alternative frying method, as literature indicated that this method produces a higher quality food product. However, vacuum fried potato-based product is the only extensively studied food product. In view of this, this work investigates the use of a vacuum fryer for frying foods other than potato-based products, namely Kumara (*Ipomoea batatas*), a traditional food for Maori and Pacific people in New Zealand. The physical and chemical properties (colour, texture, oil and acrylamide content) of Kumara French fries fried in vacuum frying system was compared with those fried in conventional deep-fat frying system. The vacuum frying experiments were performed at 110, 120 and 140°C under a vacuum pressure of 15kPA and frying times of 5, 10, 12 and 15 minutes. Conventional frying experiments were performed at 180°C, 185°C and 190°C at normal atmospheric pressure using the same frying time. Results showed that vacuum-fried Kumara French fries had higher *L* and *b* colour values, and lower *a* colour values compared to conventionally fried kumara French fries. Texture analysis showed that vacuum fried kumara French fries were harder than the conventionally fried French fries. Analysis of oil content revealed that vacuum fried samples had lower levels of oil compared with conventionally fried samples. Results also showed that acrylamide was formed in conventionally fried kumara French fries but not detected in the vacuum fried French fries.