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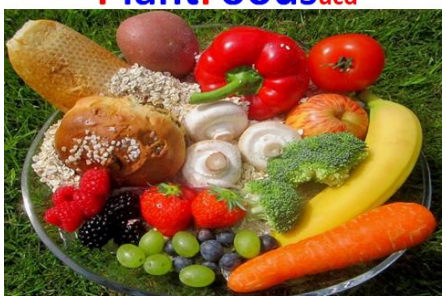

Issue 13: January, 2022: This e-bulletin is aimed at health professionals, consumers, growers, farmers, packers, processors, distributors, retailers, and others in the plant foods area.

BramleyBread – a new kid on the block!

BramleyBread was the name chosen for a novel white bread product developed by 3rd year food science students in University College Dublin (UCD) as part of their 3-month product development module coordinated by Professor Michael O'Sullivan. The decision to include Bramley Seedling apple pieces in the bread was based on their unique blend of acidity and astringency (tannins) making Bramley, arguably, the best cooking apple in the world. It grows very well in Ireland and is a source dietary fibre and antioxidants (see PlantFoods-ucd, Issue 9, 2020). Bread has a high nutritional profile and is often referred to as 'the staff of life' and its combination with apple pieces provides an enhanced nutritional status and a new flavour and texture experience for consumers.

Formulation and baking

The dough was formulated via a modification of a white bread formula used previously in the preparation of a white bread containing fresh salmon (Gormley, 2017). The main challenge was in what form the apple should be added and also how much. Possible choices were stewed apple and/or apple pieces. Bramley apples were peeled, cored and cut into cube-like pieces not greater than 1cm in size while wedges were also stewed (see PlantFoods-ucd, Issue 9, 2020). The peeling and cutting operation was conducted quickly as otherwise discolouration of the apples would occur. In a commercial situation where large amounts of apples were being prepared the pieces would require dipping in a Natureseal AS1 (anti-browning agent) solution to maintain apple whiteness (Roessle *et al*., 2009). Preliminary baking tests indicated that stewed apple on its own gave bread which was too soggy. Tests were conducted with apple piece additions of 10-55g at 5g intervals followed by baking of the mini loaves. This indicated that an inclusion of 50g of pieces gave the best outcome following assessment by a number of peers and led to the following final dough formula with ingredients included as a percentage of flour weight; 100 (flour), 58 (water), 50 (apple pieces), 8 (rapeseed oil), 6 (stewed apple), 4 (baking powder), 4 (Sunfiber) and 2 (sugar). The sequence of ingredient addition was: mix flour and baking powder; add Sunfiber, rapeseed oil, water, sugar and apple pieces; add stewed Bramley apple; mix (Hobart mixer) until all ingredients are incorporated; allow dough relax (10min), weigh dough (170g) into each pre-greased mini baking tin; bake for/at 35min/160°C; cool and pack in labelled plastic bags. Obviously different baking times/temperatures would be required depending on the size of loaves being produced.

Composition, nutritive value, flavour & texture

The composition of the bread was estimated using data from McCance & Widdowson's Food Composition Tables (1978) and applying to the dough formula figures above (allowing for 12% weight loss during baking). Composition (%) was circa 45.5 (carbohydrate), 41.6 (moisture), 6.1 (protein) and 4.8 (oil). The dietary fibre content

is discussed in the section below. BramleyBread has fairly similar nutritive properties to white bread together with additional nutrients (antioxidants and dietary fibre) from the Bramley apple inclusions. BramleyBread has an attractive golden crust with a crunchy texture while the internal colour is bright and almost white. Flavour was excellent as assessed by a number of panellists.

Dietary fibre content

The Irish diet is deficient in dietary fibre with an intake of 19g/adult/day (Flynn *et al.,* 2011) compared to 25g/adult/day recommended by the European Food Safety Authority. Dietary fibre content of the ingredients was obtained from McCance & Widdowson's Food Composition Tables (1978) i.e. white flour (3.4), cooking apple (2.4), stewed cooking apple (2.1%). Sunfiber contains 80% dietary fibre. These figures were applied to the dough formulation above and the dietary fibre content of the baked loaves was estimated at 3.8%. Therefore, BramleyBread is a source of dietary fibre (health claim) as the content is >3%. The dietary fibre content can be increased by higher inclusions of Sunfiber (produced by Taiyo GmbH). Sunfiber is a water soluble bean fibre derived from the guar plant. It is tasteless and is recommended for fortification of bakery products (https://taiyogmbh.com/en/sunfiber-en/).

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Conclusions: BramleyBread is a novel product which offers added value for bakers and is an attractive additional bread choice for consumers. It combines the nutritive properties of white bread with the unique flavour and nutritive properties (acidity; astringency; antioxidants; dietary fibre) of Bramley apples and be claimed as a source of dietary fibre. BramleyBread was rated the best product of eight other food products presented/assessed at the annual 3rd year food science Products Day in UCD at the end of November 2021. BramleyBread is safe when produced in accordance with Good Manufacturing Practice; the group also prepared a HACCP plan for the product.

References

*Flynn A. et al., Walton J., Gibney M., Nugent A. & McNulty B. 2011. The National Adult Nutrition Survey. Irish Universities Nutrition Alliance (IUNA), Summary Report, 37 pages.
*Gormley, T.R. 2017. Arán Bradán - salmon bread. *Dairy & Food Industries eMagazine*, March, 37-38.
*McCance & Widdowson, 1978. The Composition of Foods. 4th Edition. London, UK: H.M. Stationary Office.
*Roessle, C., Gormley, T.R. & Butler, F. 2009. Efficacy of Natureseal AS1 browning inhibitor in fresh-cut fruit salads applications with emphasis on apple wedges. *J. Horticultural Science & Biotechnology*, ISAFRUIT Special Issue, 62-67.

See previous 12 issues of PlantFoods-ucd at: https://www.ucd.ie/foodandhealth/more/plantfoodsucd/

This product development project was conducted in UCD by Emma Ryan, Caoimhe Egan, Seamus Duff & Eleanor Fitzpatrick in cooperation with Lauren McGuinness (Demonstrator) & Assistant Professor Peter Dunne (Supervisor). This document was compiled by Professor Ronan Gormley, UCD Institute of Food & Health, School of Agriculture & Food Science, Belfield, Dublin 4. **More information from ronan.gormley@ucd.ie