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Oat extract can be used as a fat replacer in cake batters

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Oat (*Avena sativa*) is a basic ingredient in many of bakery products, including those with low-fat or calorie and high fiber content. The use of β -glucans as hydrocolloids in food industries is based on its potential as rheological agent can be used as thickeners to modify the texture and appearance of products. The objective of this study was to evaluate the structure of cakes batters varying the fat bases to replace the hydrogenated vegetable fat using back extrusion analyses. Three formulations were evaluated: a standard (sample A) containing hydrogenated vegetable fat (HVF), sample (B) formulated with oat extract (OE) and sample (C) 50% (HVF/OE); plus: wheat flour, sugar, emulsifier, dried eggs, water, milk powder, salt and baking powder. Tests were performed with 3 replication using TA-XT2 texturometer (Stable Micro Systems, UK) with a 45 mm compression probe A / BE back extrusion. The compression speed was 2 mm.s⁻¹ to a depth of 25 mm. According to the results all samples are significantly different ($p < 0.05$) among them. Sample A showed higher break point value (1.70 N) than sample B (0.68 N) and C (0.12N) that were the lowest values. For firmness, the sample formulated with HVF showed more hardness (1.70N) than the sample B (0.68N) and sample C (0.12N). Consistency coefficient (A: 19.29 N.s; B: 8.18 N.s; C: 13.53 N.s), cohesiveness (A: -1.23 N; B: - 0.38 N; C: -0.67 N) and viscosity index (A: 17.48 N.s; B: 8.02 N.s; C: 12.52 N.s) parameters exhibited decreased on their values. The batters were evaluated as dilatant fluids characterized by calculating the viscosity index. Although the values of the back extrusion analysis have shown significant declines in measured values, oat extract could produce cakes with the same quality of those cakes produced with HVF due its gelling capacity. It was observed in the compression-extrusion analysis low energy expenditure formulations of oat extract in relation to the cake prepared with HVF.

Biography

Suzana Caetano da Silva Lannes is working as an Associate Professor at Pharmaceutical Sciences School of University of Sao Paulo. She is the President of Brazilian Society of Food Science and Technology, and Vice-president of Brazilian Association of Rheology. She has published papers in reputed journals, book chapters, and has been serving as Editor in Chief of *Food Science and Technology-CTA Journal*. She develop research works in the Food Science and Technology area, on the following subjects: rheology, physics of foods, development of special and nutritional food formulations and study of fat foods (emulsion, chocolate products, cupuassu, mayonnaise, ice cream and bakery).

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