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Analysis of Lablab Bean (Lablab purpureus (L.) Sweet) Sprout Milk with Fortification of Egg Shell Extracted Calcium

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Lablab purpureus (L.) Sweet is a common bean in Asia. High protein content and similar amino acid composition with soybean makes it good substitutes against dependency on import products. One example of bean product is vegetable milk. Fortification is executed to create product, which compels our diet. Many European undergo low protein and mineral intake from food. That is the reason of fortification utilizing food waste, namely eggshell waste. Milk created using beans is processed immediately. However, physiological process (germination) is capable of increasing its nutrition quality. This research focuses on variation of germination time: 0, 12, 24, 36, and 48 hours. Protein digestibility is selected as the main parameter to consider the time. Protein, water, and mineral content, pH, and total soluble solid content of the milk is analyzed. Germination time of 36 hours establishes sprout with digestible protein of 13.36±0.59 g/100g, protein content of 7.21 g/100g, pH of 6.74±0.17, and total soluble solid content of 19.0±0. The addition of eggshell extracted calcium as calcium fortification is 2% w/v, which resulted in mineral content of 276±0.13 mg/100g and water content of 80.87%.

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Food safe 3D printing

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3D printing is new technology with exponential expanding of usage. More and more industries are implementing this new method into their existing manufacturing processes. In my previous two works I was testing 3D printed turbulence promoters and static mixers in membrane filtration separation. Using a 3D printed object in food industry doesn't mean that it has direct contact with food, but it is important question, to find out is 3D printed object food safe, can it have longer direct contact with food. In this work I am analysing the processing time-line of the filament (material for 3D printing) from unboxing to the extrusion trough the nozzle. It is important task to analyse the growth of bacteria on 3D printed surface, because we need smooth material and pay attention to the design. Our experiments proved, that by default, 3D printing object is not food safe after longer usage and direct contact with food (even though we use a food safe filaments), but there are solutions for this problem, for example by using food grade epoxy resin.