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# A novel approach for determining coconut drink adulteration by means of laser-light backscattering imaging

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In this work, the simulated adulteration of coconut drink by dilution with water was investigated using laser-light scattering imaging (LLBI). The laser-induced diffuse reflectance system consisted of six low power laser modules, emitting 1 mm diameter beams at wavelengths of 532, 635, 780, 808, 850, and 1064 nm. Vis-NIR camera (12 bit/pixel) was used to acquire the backscattering images of coconut drink at different dilution levels (0-20%). The methods of principle component analysis (PCA) and partial linear square regression (PLSR) were performed on LLBI parameters for classifying and predicting dilution level of coconut drink samples. The PCA result indicated that the LLBI parameters in five dilution levels were discriminated as proportion of Variance by first component PC1 (61.2 %) and second component PC2 (27,65 %) resulting in a total explained variance of 88.85 %. The prediction of dilution level by PLSR achieved a high coefficient of determination ($R^2$) of 0.957 and a low root mean square error (RMSE) of 1.46% with 3 latent variables. This result has demonstrated the potential of laser-light backscattering imaging as a rapid and non-destructive optical technique for evaluation of coconut drink adulteration.

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# MUSHROOM POWDER AS POTENTIAL ADDITIVE TO A NUTRIENT-DENSE FOOD FOR HUMANITARIAN EMERGENCIES: A REVIEW

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A humanitarian emergency occurs when certain crisis threatens health, safety or well-being of large vulnerable populations (children, pregnant and nursing women, migrants, displaced people, and wounded individuals) who are incapable to withstand the adverse consequences by themselves. Such crises involved: armed conflicts, epidemics, famine,natural disasters, and other forms of emergencies. Most often, survivorsare left in crucial need of life-saving aid, especially nutrient-denseemergency food. This type of food is usually high in carbohydrates and protein content that can alleviate hunger, stress, and are a source of immunity boosters. This review will delve into the potentiality of the edible mushroom as a source of emergency food whether in ready-to-eat or ready-to-grow form. The topics in this review paper are (1) species,abundance and economic value of edible mushrooms, (2) nutritionalcontent of edible mushrooms, (3) novel processes of enhancing nutrientsfrom cultivated mushrooms, (4) innovative technologies and methods ofprocessing mushroom for emergency food.