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Determination of *Ganoderma lucidum* polysaccharide adulterated with starch by near infrared spectroscopy

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This paper reports the feasibility of determining the adulterated starch levels in *Ganoderma lucidum* polysaccharide using near infrared reflectance (NIR) spectroscopy coupled with multivariate methods. Multivariate calibration modeling procedures such as partial least squares (PLS), interval partial least squares, backward interval partial least squares and forward interval partial least squares were applied to select the effective spectral regions that provided the lowest prediction error. According to the sum of squared differences and the root mean square error of prediction by the external validation, the optimal combinations of 8 spectral intervals were selected by forward interval partial least squares model. The optimal model was achieved with determination coefficient of 0.9962 and root mean square error of cross-validation of 0.0252 in calibration set and determination coefficient of 0.9957 and root mean square error of prediction of 0.0258 in validation set. The results indicated that NIR spectroscopy with forward interval partial least squares algorithm could be applied to determine the adulterated levels of starches in *Ganoderma lucidum* polysaccharide.

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The role of multivitamins in pediatric HIV management in Nigeria: A randomized controlled study

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Micronutrient deficiencies in people living with HIV (PLHIV) have been reported. Multivitamins can be used to address micronutrient deficiencies; however the benefits of multivitamins on health outcomes of PLHIV remain debatable. While some studies have reported the benefits of multivitamins in PLHIV, other studies have reported non-significant differences in outcomes of interest in control and multivitamin groups. With obvious differences in strength and composition of multivitamins used in the different studies, it is possible that the intervention (multivitamins) used for some of these studies may not have been dosed high enough to meet the level of micronutrient deficiencies in study participants resulting in non-significant results. It is possible that higher strength multivitamins may better meet existing micronutrient deficiencies resulting in better health outcomes in PLHIV. Hence we are currently conducting a double blind randomized controlled study in Lagos, Nigeria to compare three multivitamins. Multivitamin A: Contains 7 micronutrients at recommended daily allowance (RDA), Multivitamin B: Contains 22 micronutrients at RDA and Multivitamin C: Contains 22 micronutrients at 3 times the RDA. The aim of this six months study is to determine if any of the three multivitamins will produce better health outcomes in study participants. Participants are HIV positive children aged 5-12 years. Primary outcome is changes in CD4 count and secondary outcomes are changes in serum selenium and zinc levels. Baseline and midpoint samples have been collected and are being analyzed.

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