



SDI Review Form 1.6

Journal Name:	British Microbiology Research Journal
Manuscript Number:	Ms_BMRJ_23495
Title of the Manuscript:	Effects of fermentation and extrusion on the proximate and organoleptic properties of cowpea-plantain flour blends
Type of the Article	Original Research Articles

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	Line 1: the author talks about the 'nutritional properties' whereas the parameters assessed are related to the chemical composition. From the introduction, the neither the justification of the mixture of plantain and cowpea flours nor the treatments (fermentation and extrusion) are not clear. Their importance concerning the improvement of food quality as well as the need of the combination of fermentation and extrusion and the aspect of food quality improve by these treatments are not highlighted. During production of plantain and cowpea flour, which rate of raw material was retained by sieve? Was particular equipment used for sieving? Fermentation and extrusion: 1) Describe the containers in which fermentation was carried out and the quantity of sample introduces in any container and give the temperature of fermentation. Were the samples homogenised during fermentation? 2) give the parameters of extrusion	The chemical compositions are used to determine the nutritional properties of food. Chemical composition of any food can be classified into nutritional, antinutrient, phytochemicals, e.t.c. Thanks, this will be expanded on. This will also be enumerated. About 6% of the raw material was retained. Hand sieve of 0.25mm mesh was used. 1) Three clean plastic containers with tightly fitted covers were used for fermentation. 1000g of each sample was introduced into each container. Sample A (1000g of plantain flour), sample B (800g of plantain flour and 200g of cowpea flour) and sample C (600g of plantain flour and 400g of cowpea flour). These samples are represented in ratios 100:0, 80:20 and 60:40. Temperature of fermentation was 38°C. The samples were not homogenized during fermentation to avoid contamination. 2) Extrusion cooking technology combines mechanical shear, high pressure and inter-particulate frictional heat to transform raw materials



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	Line 82: check the temperature of storage (382°C). Line 91: describe the measurement of pH Results and discussion: the samples must be codified base on experimental design in methodology prior to the use of the whole codes in results and discussion. Complete the value of the results on proximate composition with the appropriated units basing on dried matter. Lines 240 to 243: what is the source of the microorganisms found in these products? Are there characteristics of this type of product? Conclusion: from this work what is the treatment for the better improvement of the quality (principal responses) of the blends?	into cooked products in a very short time. 32°C 2g of each sample was dissolved into 50ml of distilled water and homogenized. The pH meter was calibrated with buffer solutions of pH 4 and 9, this was followed by dipping the electrode of the pH meter into the sample solution and the observed pH was read and recorded in triplicates. Thanks, this has been corrected. The microorganisms could be from the substrate since they were not sterilized prior fermentation. Some of the microbes are characteristics of lactic acid fermentation that occurred in the samples. From this research, fermented extruded samples had the best nutritional effects, this is followed by fermented unextruded blends.
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Minor REVISION comments	Line 15: precise the direction of pH and total titrable acidity variations Line 31 to 33: actualise the data concerning the production of plantain in Central and West Africa. Use the recent data. Line 41 and 50: precise in which context these foods are 'traditional'. Line 58 to 59: describe with more details the collection of sample: locality, period of sampling, the strain and the age of plantain used Line 61: precise the nature of water used Line 62: precise the thickness. 72 h of sun drying is the time of the exposure of the slices to sun or the drying was carried out for 3 days? Line 72: why the medium is considered as semi-solid? Lines 72 to 77: what are the water absorption capacities of the both flours?	There was decrease the pH of the fermenting substrates while the total titrable acidity increased. Ok, thanks In line 41, what I mean is that cowpea is locally consumed in Nigeria. It is used to produce varieties which can be consumed in various forms such as moin moin, akara, e.t.c. In line 50, it means that fermentation has been practiced for many years and it is often used during traditional festivals in various parts of the world Fresh matured unripe plantain (<i>Musa paradisiaca</i> AAB) was purchased from Ibule in Akure metropolis, South Western Nigeria and cowpea (<i>Vigna unguiculata</i> (L) Walp) was purchased from Akure, Nigeria. Period of sampling was done in October, 2014 Age of plantain is 4 months. Sterilized water was used for fermentation. Thickness of the sliced plantain is 2mm The drying was carried out for 3 days The medium was considered as semi-solid because the water added is not free flowing, it is only sufficient to make a thick paste of the substrate. This was not calculated as it is out of the scope of this research.



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	Line 77: the sample was mixed using spatula? Lines 88 to 89: briefly describe the methods used to identify microorganisms. Lines 116 to 122: give the results of microorganisms isolated in respect to different samples fermented. Results and discussion: Highlighted the effect of different factors and their interaction on each response measured using statistical analysis. Describe the general evolution of one response, no point by point description. Check the police on figures and give the composition of blend using proportion and not the mass of constituents (100% and not 100g for instance). Group the results concerning proximate composition of different samples in one table and remove the figures related to these parameters Line 148: replace 'composition' by 'content' and 'protein' by 'moisture' Lines 150 and 153: replace '-' between A and C by 'to'. Lines 157, 165, 173, 180 and 187 replace 'composition' by 'content'. Line 254: why moisture is consider as 'stable'? Line 290: replace 'fat content' by 'fat' Lines 319 to 320: this is possible when during fermentation substrate is soaking and the surrounding water is free, and is not the case in this study where the medium is 'semi-solid', find another justification for the ash content reduction during fermentation in this study. Line 334: delete the repeated 'blend'	Yes Standard microbiological methods were used. Nutrient agar and potato dextrose agar were used to culture bacteria and fungi respectively during fermentation. Distinct colonies were streaked on selective media and further biochemical tests were carried out further identify the microorganisms. This will be included in the manuscript. Thanks, this has been done I initially thought of representing the result with a table but later thought that figures will be able to represent the results distinctly without any form of confusion. Ok, thanks Okay, thanks. Moisture was considered as stable because the initial moisture content of the raw samples before fermentation was relatively low Okay, thanks.
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<u>Optional/General</u> comments	The effect of substitution rate of plantain flour by cowpea flour is almost absent in results and discussion even in conclusion as well as the effect of the interaction of different factors on the responses.	This will be added.