

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**FACULTY OF APPLIED SCIENCES**

**DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY**

**PROJECT TITLE**

**AN INVESTIGATION OF THE IN VITRO PROTEIN DIGESTIBILITY OF  
DIFFERENT VARIETIES OF SORGHUM AND MILLET AND EFFECT OF  
TRADITIONAL PROCESSING METHODS**

**BY**

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## SECTION 1 ABSTRACT

The protein content of sorghum varieties; variety DC75, 8636 and 9314, and millet varieties; pearl millet variety - 2 Zimbabwe, SPMV 90016 Namibia, Kaufela - Zambia and ICMV - 88908 was determined using the Micro-Kjeldahl Nitrogen Determination. The protein content in the different sorghums varied over a range 9.8 - 10.5%. The protein content of millet varieties varied over a range 8.1 - 9.3%. The in-vitro pepsin digestion was used for comparing digestibility levels of different sorghum and millet preparations, cooked and uncooked. The digestibility of the different sorghum varieties was found to be; DC75 - 26.67%, 8636 - 33.33% and 9314 - 35.7%. The digestibility of the different millet varieties was found to be; PMV - 2 Zimbabwe - 34.96% SDMV 90016 Namibia - 36.17%, Kaufela-Zambia 32.33% and ICMV -88908 - 35.06%.

The tannin content in the different varieties was determined. It was found that digestibility was lower in high tannin sorghum varieties. The effect of malting on protein digestibility was assayed. Digestibility was increased by malting. Digestibility was found to be 53.3% for sorghum DC75 malt and 43.72% for millet 1 CMV-88908 malt. The cooking increased digestibility and the protein digestibility of thin porridges prepared was found to be;

Sorghum DC75 unmalted	-	56.67%
" " malted	-	78.33%
" 8636 unmalted	-	56.67%
Millet ICMV-88908 unmalted	-	65.37%
Millet ICMV - 88908 malted	-	76.20%