PDF - NUTRITIVE VALUE OF MALTED SORGHUM SPROUT IN BROILER CHICKEN DIETS - researchcub.infoCHAPTER ONE

1.0 INTRODUCTION

The poultry industry has suffered more than any otherlivestock industry as a result of inadequate supply and high cost of feed(Hill, 1989; Mtimuni, 1995; Leplaideur, 2004). Cereal grains constitute themajor sources of energy in poultry diets in the tropics (Oluyemi and Roberts,2000). However, maize has remained the chief energy source in compounded dietsand constitutes about 50% of poultry ration (Ajaja et al., 2002). Pressure onmaize, wheat and recently cassava has been on the increase worldwide withemphasis being placed on export and other diversified uses mostly in flourbased foods and ethanol production as an alternative source of fuel (Doki,2007; Thornton, 2007). According to Etuk (2008), these trends require seriousdiversification of energy and protein feedstuffs for poultry, because theavailability of cheap and good quality protein and energy sources remain thesingle most important limiting factor in poultry production in Nigeria (Bawa etal., 2003; Abeke et al., 2008). The fact that feed alone accounts for 70–80% ofthe recurrent production input in intensive monogastric animal production makesthe utilization of multiple feed ingredients expedient (Mtimuni, 1995;Marie-Agnés, 2004). Field observations in Nigeria revealed the inclusion ofsorghum and possibly wheat in poultry and rabbit diets (Ojo et al., 2005a;Abubakar et al., 2006; Etuk and Ukaejiofo, 2007) as alternatives.

Sorghum bicolor (L) Moench is widely grown in the semi-aridand arid savannah regions of Nigeria. Maunder (2002) reported that sorghum is atraditional crop in Africa and Asia and an introduced or hybridized crop in thewestern hemisphere. Sorghum is the world's fifth most important cereal and isgrown in semi-arid regions of Africa being well adapted to the harsh climateand naturally resistant to many pests (Belton et al., 2003). It benefits from an ability to tolerate drought, soiltoxicities and temperature extremes effectively than other cereals. In terms ofthe nutritive value, cost and availability, sorghum grain is the nextalternative to maize in poultry feed (Subramanian and Metta, 2000). Severalvarieties of sorghum have been developed and introduced in Nigeria (IAR, 1999).However, the diversity of chemical composition and anti-nutritional factors,mainly tannin resulting in variability in digestibility from 35 – 60% or morehave been reported (Becker, 1992). Varieties of sorghum, climatic and soilconditions, fertilizer types are listed among the factors responsible for thevariations in chemical composition of sorghum (Aduku, 1993; Tacon, 1995; Ngoka,1997; Etuk and Ukaejiofo, 2007; Etuk, 2008). The usefulness of sorghumby-products has been reported world-wide (Mosimanyana and Kiflewahid, 1987;Mahabile et al., 1990; Dowling et al., 2003; Macedo and Aguilar, 2005; Nyannoret al., 2007). Some varieties of sorghum have phenols concentrated in the outerlayers of the kernel which serves as natural source of antioxidants for foods(Awika et al., 2001). Taylor and Da Silva (2004) reported that sorghum brancould be a source of protein for industrial uses. Apart from serving as astaple food in Nigeria, sorghum grain is used for the production of beverages.

Malting of sorghum, like barley, involves steeping orsoaking, germination, drying and curing in Kiln and polishing. The resultantmalt extract is a useful inp ut in breweries and food processing companieswhere it is utilized for the manufacture of malt drinks, syrups, beverages,baby foods, microbiological media and other useful products. Malted sorghumsprout (MSS) is a by-product of sorghum malting. The separated roots and shootswhich are left after malt extraction from the young germinating sorghumseedlings are collectively called sorghum sprout (Aletor et al., 1998). Maltedsorghum sprout has a lot of prospect as a feed stuff of the livestock industry.It is rich in organic nitrogen (Ikediobi, 1989). Malted sorghum sprout contains(g/kg); 226

crude protein, 48 crude fibre, 33 ether extract, 16 ash, 522nitrogen free extract and 16.26 MJ/kg DM gross energy (Aning et al., 1998).Aning et al. (1998) reported that magnesium was the most abundant mineral whilepotassium was the least in MSS. Among the trace minerals, Zinc is the mostabundant while copper is the least. Sorghum sprout is reported to contain aconsiderable number of amino acids with low level of methionine, lysine andthreonine (Aning et al., 1998).

The anti- nutritional factors in MSS are tannin and hydrogencyanide (Omogbai and Ojeaburu, 2010). Van Buren and Robinson (1969) reportedthat tannins affect the growth of animals in three main ways: they have anastringent taste, which affects palatability and decreases feed consumption;they form complexes with proteins which reduce its digestibility and they actas enzyme inactivators. Processing of Malted sorghum sprout was shown to haveno significant (P>0.05) effect on growth (Fanimo and Akinola, 2006) butinclusion of enzymes in feed have shown positive results in counteracting theeffects of anti- nutritional factors. This study was conducted to determineinclusion level of malted sorghum sprout on its utilization by broiler chickensand subsequent effect of enzyme treatment.

1.3 Objectives

Objectives of the study were to;