

# DOCUMENTING NORMAL MICROFLORA IN *THRYNOMYS SWINDERANUS*

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## The Problem

### INTRODUCTION

Grasscutter is one of the giant rodents of the world.

Scientifically called *Thrynomys swinderianus*.

Belongs to mammalian order *Rodentia*.

It is a relative of the guinea pig and the porcupine but looks like a giant guinea pig with a tail (Adu *et al.*, 2000).

A herbivorous rodent that occurs only in Africa.

Inhabits the grasslands and wooded savannas throughout the humid and the sub-humid areas south of the Sahara, especially from Senegal in the north-west, stretching down to parts of Cape Province in South Africa (Adu *et al.*, 2000).

Domesticated as mini livestock for meat production with its meat sold either as fresh (whole undressed) carcasses, or dressed and smoked (Barnes, 1994).

A large market for the meat in the West African sub region (Asibey, 1974).

The advocacy for domestication of grasscutter becomes stronger as it accepts indoor housing with about 90% of animals acclimatizing to domestic housing within three months (Asibey & Addo (2000).

In captivity, 89% conception, 88% deliveries and 90% weaning rate reported (Addo *et al.*, 1999).

Wide acceptability of the meat among Ghanaians, regardless of their religious faith and social status further underscores the importance of domesticating this animal.

Local meat production in Ghana falls short of demand.

Due to the insatiable demand for the grasscutter meat, some people have resorted to using poisons as baits to catch wild grasscutters and this poses a serious health threat.

The GIT was chosen because it is the most heavily colonized region of the animal.

GIT normal microflora constitute 50% of faeces by dry weight.

GIT normal microflora provides a general non-specific defence against infections.

In Ghana portions of the unpelleted faeces in the grasscutter GIT considered a delicacy (Adu & Wallace, 2004).

### OBJECTIVES OF STUDY

To characterize the cultivable normal microflora of the gastrointestinal tract of the grasscutter.

To study the influence of sex on the normal microflora of the gastrointestinal tract of grasscutter.

To study the influence of age on the normal microflora of the GIT of the grasscutter.

Ultimately, this study sought to delineate the cultivable GIT normal microflora of neonate, weaning, subadult, and adult grasscutters.

As an emerging herbivorous meat animal, the knowledge of intestinal microflora may provide clues for the formulation and use of the appropriate probiotics and prebiotics to enhance feed conversion efficiency, thereby, increasing productivity of the animals.

### MATERIALS AND METHODS

36 healthy grasscutters from farmers within the Coastal Savannah vegetation zone of Ghana were sampled.

All grasscutters divided into four age categories.

- 1-4week olds
- 2-3 month olds
- 4-5 month olds
- 6-12 month olds

Study conducted at the Animal Experimentation Dept of Noguchi Memorial Institute for Medical Research.

The room temperature throughout experimental period range from 24°C to 25°C, humidity range of between 52% and 60%, and 12 hours of alternate light and darkness. Standard feed and water were provided *ad libitum*.

Faecal sampling of the grasscutters was done in the Non-infectious Experimentation Laboratory.

All microbiological analyses were performed in the Infectious Experimentation Laboratory, a Biosafety level 2 Facility.

*Panicum maximum*, cassava tubers, sugar cane and palm fruit.

All feed were provided in fresh form *ad libitum*.

A Range of specific dehydrated microbiological media and broths of good microbiological quality were used in microbial culturing.

The media and broths were first reconstituted and sterilized according to their respective manufacturer's instructions.

### RESULTS AND DISCUSSIONS

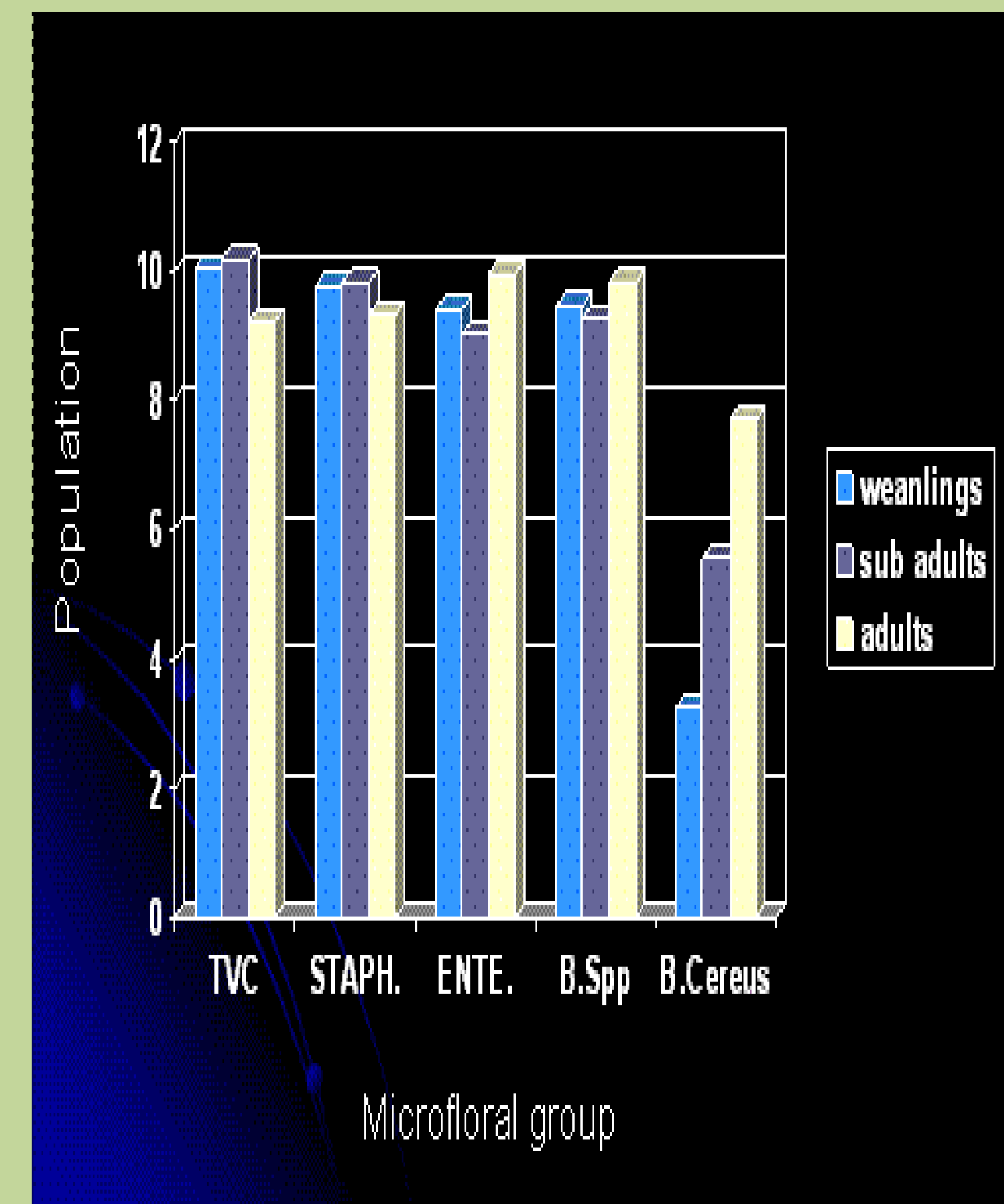
#### COMPARATIVE MICROFLORAL COMPOSITIONS OF THE 4 AGE CATEGORIES OF GRASSCUTTER

	neonates	weanlings	subadults	adults
<b>AEROBES</b>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>
	<i>Kleb. spp</i>	<i>Kleb. spp</i>	<i>Kleb. spp</i>	<i>Kleb. spp</i>
	<i>B. spp</i>	<i>B. spp</i>	<i>B. spp</i>	<i>B. spp</i>
	<i>B. cereus</i>	<i>B. cereus</i>	<i>B. cereus</i>	<i>B. cereus</i>
	<i>Staph. spp</i>	<i>Staph. Spp</i>	<i>Staph. Spp</i>	<i>Staph. spp</i>
	ND	<i>Ente. Spp</i>	<i>Ente. Spp</i>	<i>Ente. spp</i>
	<i>C. albicans</i>	ND	ND	ND

#### ANAEROBES

	<i>Pep. Spp</i>	<i>Pep. Spp</i>	<i>Pep. Spp</i>	<i>Pep. spp</i>
	<i>C. Albicans</i>	<i>C. Albicans</i>	<i>C. Albicans</i>	<i>C. albicans</i>
	<i>Bact. Spp</i>	<i>Bact. Spp</i>	<i>Bact. Spp</i>	<i>Bact. spp</i>
	ND	<i>Cl. Spp</i>	<i>Cl. Spp</i>	<i>Cl. spp</i>
	ND	<i>Coryne.</i>	<i>Coryne.</i>	<i>Coryne.</i>

Figure 2: The GIT microflora pop for 3 age categories (normal logs)



### Conclusion and Inference

The age of grasscutter unlike its sex significantly influence quality and quantity of GIT microflora.

**Bacillus cereus!** presence calls for cooking of meat properly before consumption.

Given the vast diversity and complexity of the GIT normal microflora molecular biotechnology be use as well in future studies.

These findings provides valuable research inputs: **microbial diseases, use of probiotics and prebiotics.**

\*Necessary for the Grasscutter farming (Micro Livestock) to bring about the desired impact.



Figure 1: Improved anaerobic glove box using a vinyl isolator