

Thermal Processing Schedule of Canned African Giant Snail (*Achachatina achatina*) Based Products

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Introduction

The land snails are herbivorous mollusks. The African giant snail (*Achachatina achatina*), the vineyard snail (*Helix Pomatia*) and the *Helix lucorum* are unconventional sources of meat [1]. The snail meat is a major source of protein in the diet of some people living in the forest region of Nigeria. Snails are also consumed as a rare delicacy by many Nigerians living outside the forest region.

Unlike the conventional meat sources such as beef, mutton and poultry, the snails have very low cholesterol and saturated fatty acids content [2]. The consumption of snails therefore after nutrition benefits since cholesterol and saturated fatty acids have been implicated in coronary heart diseases and arteriosclerosis [3].

Materials and Methods

African giant snails (*Achachatina achating*) of 200g, average weight were purchased from a local market (Modern market) in Makurdi, Nigeria. About 15kg of the mollusk were transported to the laboratory in moistened jute bags. After cracking the shells, the meats were shucked, washed with 5% alum solution to remove slime, packaged in polythene bags and kept under frozen storage (18⁰C) until utilized.

Lacquered 208 x 300 round sanitary cans and lids were donated by metal Box Nigeria Limited, Ogba, Ikeja-Lagos.

Media formulation and selection was done [4].

Spores of *Clostridium sporogenes* (ATCC 19404) were prepared in a beef heart infusion broth using a multiple stage inoculation procedure [5].

Normal and accelerated storage of 6 months and 6 weeks were carried out respectively. Four cans from each batch were withdrawn at weekly interval for determination of physicochemical parameters and sensory properties.

Result and Discussion

The decimal reduction curves for *Clostridium sporogenes* (ATCC 19404) spores in the canned snail products are provided in the figure below The D-values (mins) ranged from 5.4 to 0.88 min for snail-in sauce, 6.83 to 1.2 mins for snail-in - egusi and 5.6 to 0.84 mins for snail-in-brine within 104.4 to 121.1⁰C ,the z-values ranged from 8.80⁰C for SIB to 9.60 for SES products

Table 1: The Decimal reduction times of *Clostridium sporogenes* in canned snail products

Products	Temp. °C °F	D-values (min)				z-values °C
		104.4 220	110 230	115.6 240	121.1 250	
SIS		5.40	2.94	1.60	0.88	9.20
SES		6.83	3.81	2.13	1.2	9.60
SIB		5.60	2.96	1.57	0.84	8.80

SIS = Snail – in – Sauce

SIB= Snail – in –Brine

SES= Snail – in –Egusi soup

References

1. Sotelo, C.G.; Pineiro, C.J. Geulardon, J.M. and Perezmartin, R.I. (1993). Fish species identification in seafood products. *Food science and Technology*, 4 (12), 395-401.
2. Ikeme, A.I. (1985). Extending the shelf-life of smoked mackerel. *Proceedings of FAO Expert Consultation of Fish Technology in Africa, Lusaka, Zambia*, 21-25
3. Leisner, J.J. and Gram, L. (2000) Spoilage of Fish. *Encyclopedia of Food Microbiology*, 2, 813-830.
4. Vincent, A.A. (1980). *Cookery Books for the Tropics* George Allen and Unwin, London PP. 40-48:
5. Goldoni, J.S.; Kojima, S. Leonard, S. and Heil, J.R. (1980), Growing Spores of PA *Clostridium sporogenes* 3679 in formulation of beef heart infusion broth. *Journal of Food Science*, 45, 467 – 470.