

Sensory quality and safety of taste enhancers commercialized in southern and central Benin: A stakeholder prospective

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Abstract

Consumers of Afitin, a traditional condiment obtained from fermented African locust bean cotyledons, recently started to notice that the product is produced by secretly incorporating soya beans in the recipe. Consequently, reputation of this condiment is declining among consumers. Through a survey of 429 stakeholders (consumers and vendors) from Central and Southern Benin, we tried to understanding why regular Afitin consumers are increasingly interested in imported manufactured taste enhancers. This study was performed in the framework of the Soya Milk and Afitin project (Prosam) funded by PAEPARD/FARA. Three forms of taste enhancers were inventoried across the twenty-three brands of commercial taste enhancers available on the Beninese market. Factors guiding the choice of a taste enhancer are essentially: taste, aroma, price and composition. Although Afitin is renowned for its supposed health benefits, the Beninese consumer of taste enhancers do not consider Afitin alone as a product which can raise food taste as well as stock cubes. They highly recommend that other natural seasoning agents are added to Afitin to generate a good commercial stock cube. Further, stakeholders recommended the assessment of the nutritional and sanitary quality of taste enhancers available on the local market and to develop an Afitin based seasoning that meet consumer needs.

Key words: Consumer preferences, soya bean, taste enhancers

Résumé

Les consommateurs de afitin, un condiment traditionnel obtenu à partir de cotylédons fermentés de néré, ont récemment commencé à remarquer que le produit est fabriqué en incorporant secrètement les graines de soja dans la recette. Par conséquent, la réputation de ce condiment est en baisse chez les consommateurs. A travers une enquête auprès de 429 acteurs (consommateurs et vendeurs) au centre et au sud du Bénin, nous avons essayé de comprendre pourquoi les consommateurs réguliers de afitin sont de plus en plus intéressés par les exhausteurs de goût manufacturés importés. Cette étude a été réalisée dans le cadre du

Projet lait et afitin de soja (ProSAM) financé par PAEPARD/FARA. Trois formes d'exhausteurs de goût ont été inventoriées à travers les vingt-trois marques d'exhausteurs de goût commerciaux disponibles sur le marché béninois. Les facteurs qui guident le choix d'un exhausteur de goût sont essentiellement: le goût, l'arôme, le prix et la composition. Bien que afitin soit réputé pour ses bienfaits supposés pour la santé, le consommateur béninois des exhausteurs de goût ne considèrent pas que afitin seul en tant que produit peut augmenter le goût des aliments comme le font les cubes de bouillon. Ils ont fortement recommandé que d'autres agents d'assaisonnement naturels soient ajoutés à afitin pour générer un bon cube de bouillon commercial. En outre, les acteurs ont recommandé l'évaluation de la qualité nutritionnelle et sanitaire des exhausteurs de goût disponibles sur le marché local et de développer un exhausteur de goût à base de afitin qui répondent aux besoins des consommateurs.

Mots clés: Préférences des consommateurs, soja, exhausteurs de goût

Rationale

Stock cubes enhance the taste and increase food taste properties (Akpanyung, 2005). In West Africa, stock cubes are used daily as part of the local cuisine. Essential for home-made preparations, stock cubes lead the taste enhancers business because of their low price, ease of use and storage. However, their use is getting controversial as they are said to be harmful to consumers' health. The key concern raised regarding stock cubes is ingredient and chemical composition. Indeed, chemical composition of the stock cubes is usually lacking on the packaging. Scientific literature (Elemo and Makinde, 1984) reveals that the main ingredient of stock cubes are Mono-Sodium Glutamate (MSG) and Sodium chloride (NaCl). Very high concentrations of MSG are known to be harmful to consumers (Olney and Sharpe, 1969; Whelton *et al.*, 2012; Kotchen *et al.*, 2013). Nevertheless, no detailed scientific publication investigated the risks related to the consumption of MSG. Whereas some housewives take delight in using stock cubes, others are suspicious and prefer traditional practices. The latter prefers Afitin, a traditional African locust bean based condiments judged to be safe by consumers. It results from the alkaline and natural fermentation of the cotyledons of ALB (*Parkia biglobosa*) for 24 hours (Azokpota *et al.*, 2007). This condiment competes with stock cubes on the local market. It is the most popular for seasoning in terms of production, consumption and trading in Benin (Gutierrez *et al.*, 2000). Consumers of Afitin recently started to notice that the product is produced by secretly adding soya bean to the ALB. The reputation of this condiment is therefore declining. Beninese consumers know Afitin as an ALB based product. Gutierrez (2000) explains that the nutritive value of Afitin is not influenced by the use of soya beans as a substitute for ALB.

Study description

The study described below is being conducted in the framework of a project entitled "Re-engineered Soybean "Afitin" and Soybean Milk processing technologies in Southern and Central Benin (ProSAM)". This project is funded by the European Union (UE) through the Forum for Agricultural Research in Africa (FARA) as a Competitive Research Fund (CRF)

of the Platform for African-European Partnership on Agricultural Research for Development (PAEPARD) in which the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is a key training actor. The project addresses the issue of low productivity of soybean processing units in South and Central Benin and the low quality of the soybean milk and soybean “Afitin”. These two soybean derived products have great potential for development since their demand on the market is high. Within this project the Faculty of Agronomy, University of Abomey-Calavi (FSA/UAC) is in charge of optimizing soya bean Afitin production and developing an accepted taste enhancer from traditional soya bean Afitin. More specifically, the present study aims to establish the determinants of taste enhancers consumption and the demand of the local market in terms of taste enhancers. Therefore, we took an inventory of the stock cubes available on Beninese market, identified the determinants of stock cubes consumption and tested the concept of a new taste enhancer based on soya bean Afitin with consumers. This study was performed through a survey in rural (Bohicon, Djidja, Glazoué, and Zogbodomey) and urban (Cotonou, Porto-Novo and

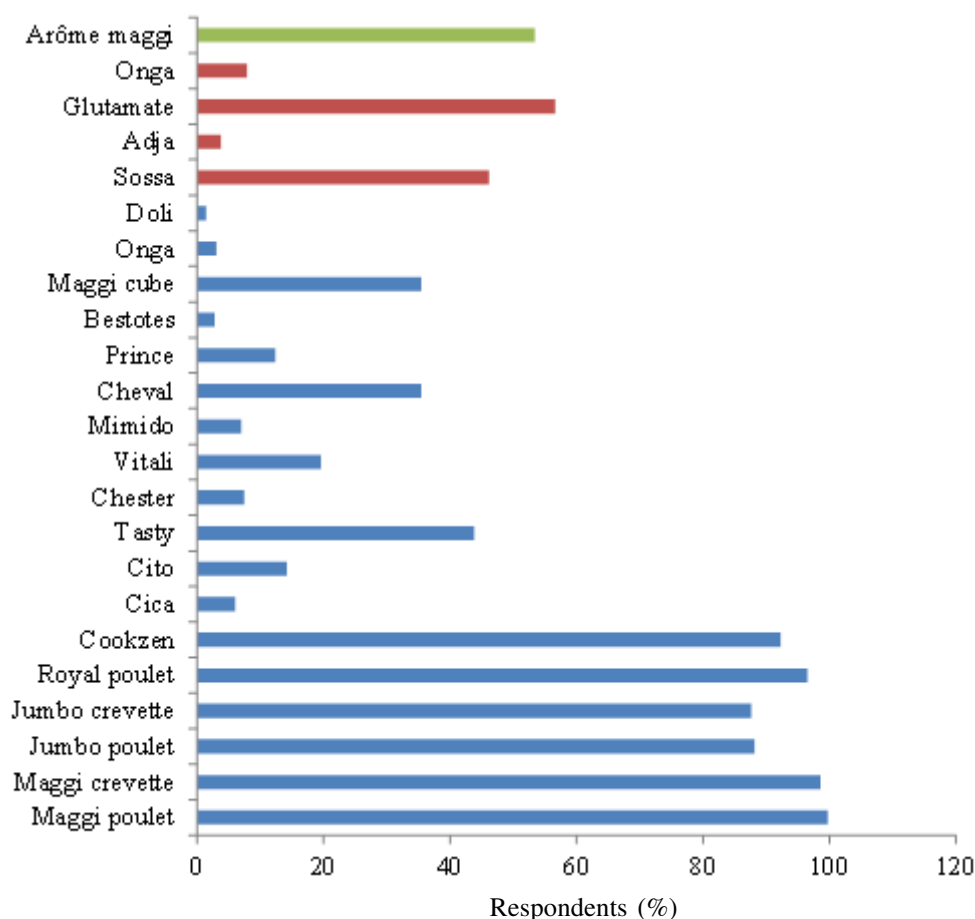


Figure 1. Consumer preferences for taste enhancers available on Benin market

Legend: Green bars represent liquid taste enhancers; Red bars are meant for powder taste enhancers and Bleu bars represent stock cubes

Abomey-Calavi) municipalities of southern and central Benin. In each locality, 30-50 stakeholders were interviewed using semi-structured questionnaires. In total, 429 retailers of taste enhancers were visited randomly according to the method of Dagnelie (1998).

Results

The study identified twenty-three commercial brands of taste enhancers on Beninese markets. These are available under three forms: stock cubes, powders, liquids (Fig. 1). Preferences for taste enhancers are determined by sensory properties such as taste, aroma and appearance of the product but also by the price, the ease of use and the ingredients that compose the

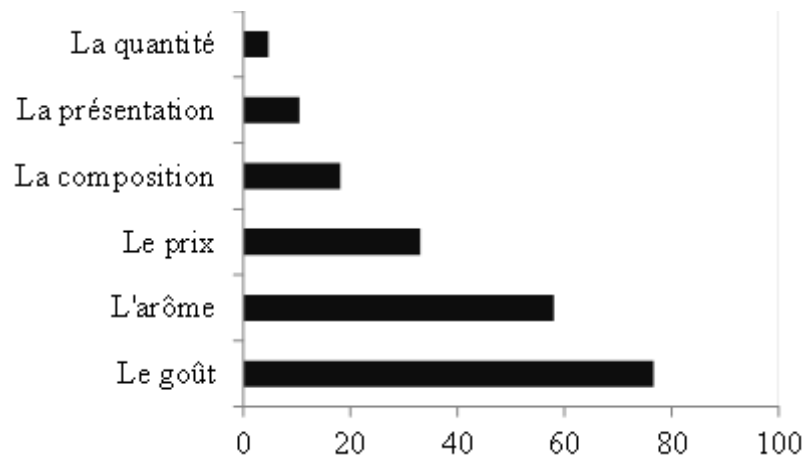


Figure 2. Determinants of consumer preferences regarding taste enhancers

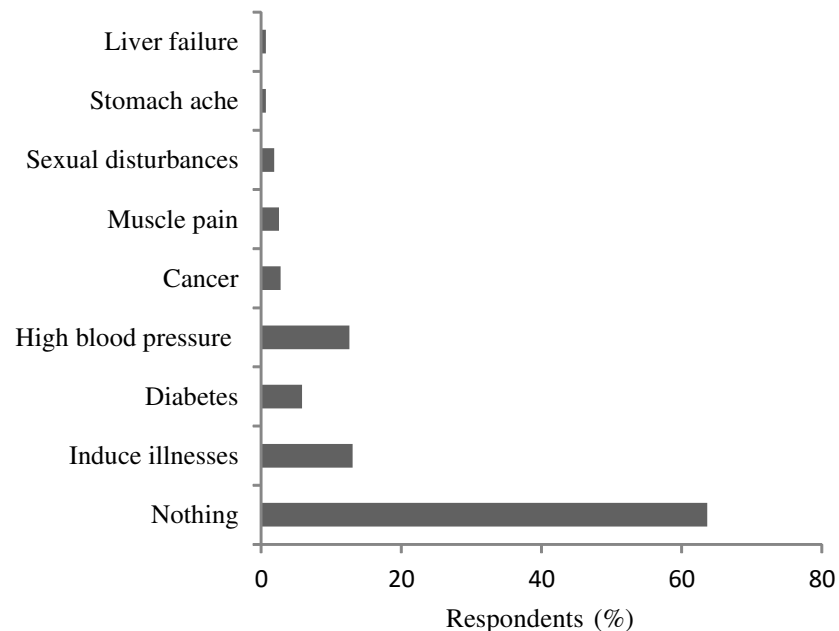


Figure 3. Popular concerns related to the consumption of taste enhancers

recipe (Fig. 2). Consumers expressed concerns about commercial taste enhancers (Fig. 3) and were strongly in favour of the improvement of Afitin production.

Afitin is known and valued by consumers who strongly confer to it numerous health benefits (Fig. 4). Indeed, its consumption is said to prevent high blood pressure, it has good taste and contains vitamins. However, respondents (62%) indicate that Afitin cannot substitute commercial stock cubes (Fig. 5) mainly because it is not able to raise the taste of foods as the commercial stock-cubes. Therefore, they strongly recommend that Afitin based stock cubes be produced by mixing powdered Afitin with diverse spices.

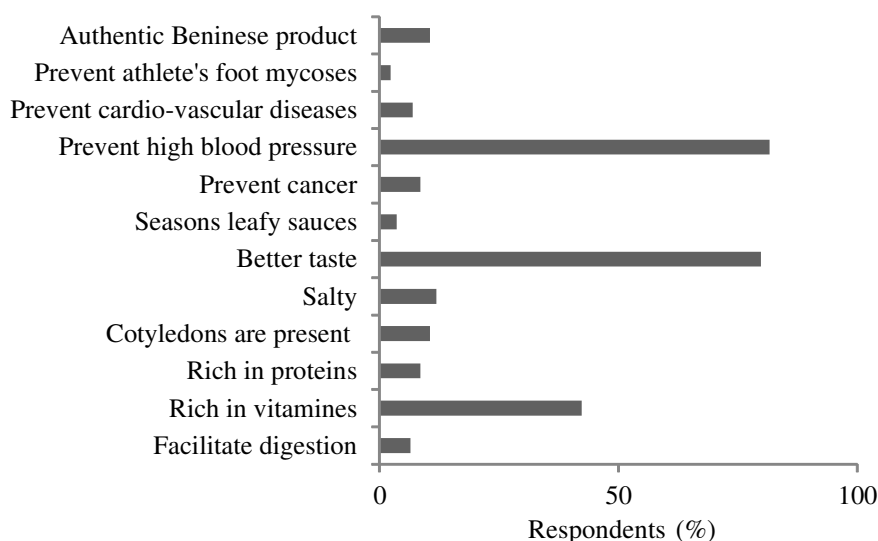


Figure 4. Why Afitin is a well appreciated taste enhancer?

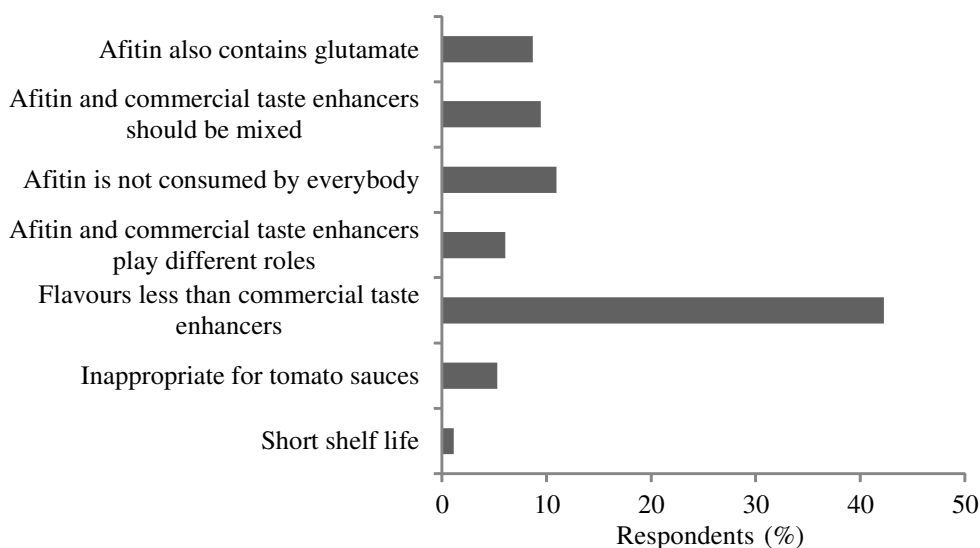


Figure 5. Why Afitin cannot substitute stock cubes?

Conclusions and recommendations

This study suggests that Beninese consumers select their taste enhancers primarily by considering their taste, aroma, price and composition. Afitin, a potential substitute to commercial taste enhancers, has its consumption hampered by (a) its strong smell, (b) the risks of allergic reactions from its consumption, and (c) the notion that its production lacks hygiene. Consumers consider that Afitin alone is not able to generate as much flavour as commercial taste enhancers. Researchers recommend the assessment of the safety and nutritive value of commercial taste enhancers (CTEs) and the development of a soya based taste enhancer by mixing soya Afitin with other condiments.

Acknowledgements

Researchers and stakeholders involved in this project are highly grateful to the EU who funded this study through PAEPARD, a platform initiated by FARA (Forum for Agricultural Research in Africa). We are also grateful to RUFORUM for training the members of Soya bean Consortium of Benin for writing the project proposal and giving management skills to its members to run the consortium partnership. This paper is a contribution to the 2016 Fifth African Higher Education Week and RUFORUM Biennial Conference.

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