

# WORKING TOWARDS THE DEFINITION OF QUALITY FEATURES OF TWO TRADITIONAL STREET FOODS, BENINESE ATA AND ITALIAN POPIZZA

D. De Angelis<sup>1</sup>, D. Di Rella<sup>1</sup>, Y. Madodé<sup>2</sup>, A. Briffaz<sup>3</sup>, D.J. Hounhouigan<sup>2</sup>, C. Summo<sup>1</sup>, A. Pasqualone<sup>1</sup>

<sup>1</sup>University of Bari, Italy. <sup>2</sup>Laboratory of Food Sciences, University of Abomey-Calavi, Benin. <sup>3</sup>UMR QualiSud, Montpellier, France

Correspondence: [antonella.pasqualone@uniba.it](mailto:antonella.pasqualone@uniba.it); [davide.deangelis@uniba.it](mailto:davide.deangelis@uniba.it)

## Introduction

Street food plays a recognized socioeconomic role, offering opportunities of employment particularly for women, and providing cheap food to lower income people. West Africa is characterized by several traditional foods, widely consumed but poorly investigated. Ata is a fried dough made of cowpea flour, very popular in Benin. In Southern Italy, popizza is prepared in a very similar way as ata, but using wheat flour, and has never been studied. This work aimed at defining the main physico-chemical quality characteristics of ata and popizza, and to compare them.

## Methods

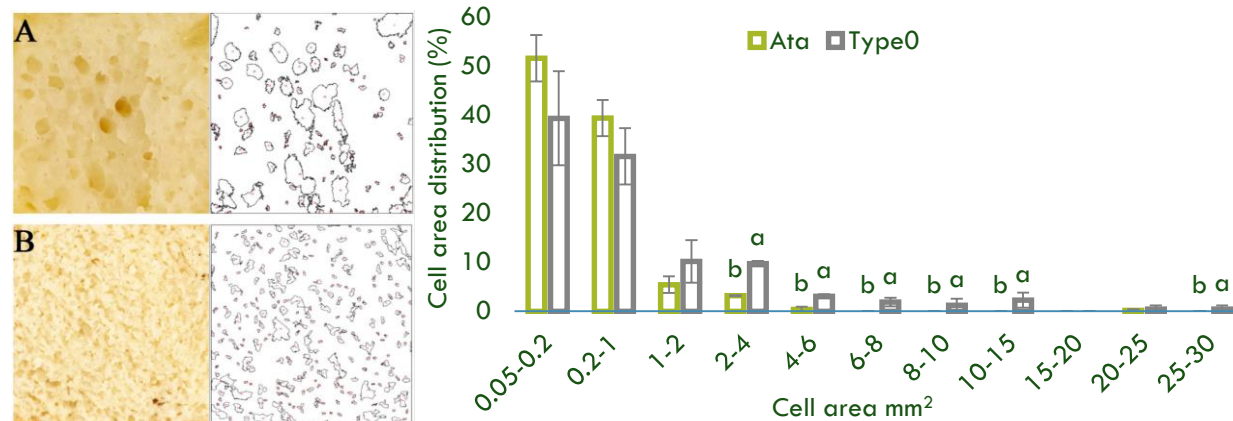
Cowpea (for ata) or wheat (for popizza) flour, yeast and salt were mixed with water to obtain a dense batter, which was left to rise (90 min, 25 °C). Then, batter portions (4 cm diameter) were deep fried. Batter viscosity at increasing temperature, color, crumb structure, texture, and oil uptake were assessed. Data were subjected to one-way ANOVA with 5% as level of significance.

Popizza (left) and ata (right) fritters



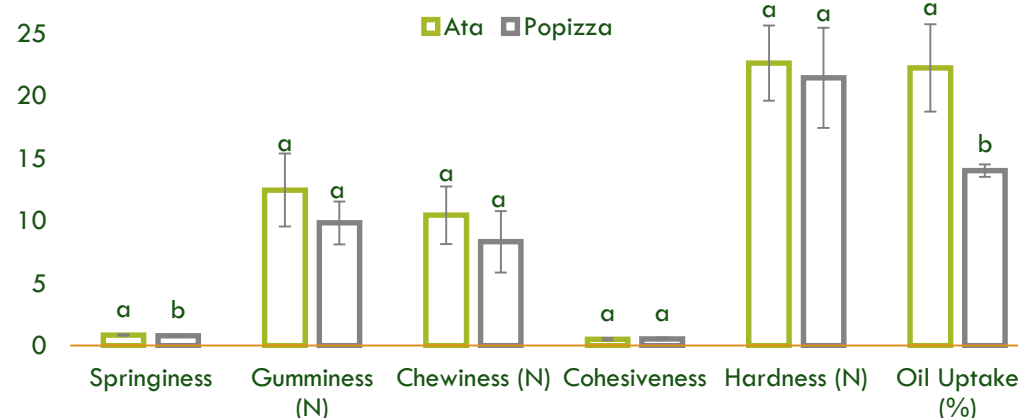
**Acknowledgments:** "Legume GEneTic REsources as a tool for the development of innovative and sustainable food TEchnological system" supported under the "Thought for Food" Initiative by Agropolis Fondation (through the "Investissements d'avenir" programme - ANR-10-LABX-0001-01"), Fondazione Cariplo, and Daniel & Nina Carasso Foundation. This research is a collaborative activity with another "Thought for Food" Initiative project entitled "Increasing COwpea value chain sustainability in West Africa through Product and procEss innovation."

Results of the image analysis of the crumb structure of popizza (A) and ata (B)



Oil absorption is related to pore radius, with smaller pores causing higher capillary pressure and then higher oil uptake. Ata fritters showed a more finely porous crumb structure than popizza, and this explains why ata absorbed more frying oil.

Results of the texture profile analysis carried out on the two products and oil uptake



De Angelis, D., Madodé, Y. E., Briffaz, A., Hounhouigan, D. J., Pasqualone, A., & Summo, C. (2020). Comparing the quality of two traditional fried street foods from the raw material to the end product: The Beninese cowpea-based ata and the Italian wheat-based popizza. *Legume Science*, e35 (10 pages). doi: [10.1002/leg3.35](https://doi.org/10.1002/leg3.35)

## Discussion

Based on the thermal behavior of ata batter, it is plausible that cowpea flour contained more damaged starch than wheat flour. The lack of gluten in cowpea caused a finer crumb structure in ata compared to popizza and, in turn, higher springiness, because the gas was not retained by gluten-free batter. The presence of damaged starch in ata enhanced the Maillard reaction, resulting in a browner color. Smaller pores, as in ata, caused higher capillary pressure and, consequently, higher oil uptake.

**Knowledge about quality of these foods could enhance their marketing, with positive effects on local economy.**

Thermal behavior of ata and wheat batters

