

FROM TUNISIAN CEREALS TO FUNCTIONAL NUTRITION: SUPPORTING CHILDREN WITH AUTISM

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1.CONTEXT OF THE STUDY

In Tunisia, Autism Spectrum Disorder (ASD) is estimated to affect approximately 200,000 individuals according to institutional reports, although official and comprehensive national epidemiological data remain limited and incomplete. Despite this relatively high estimated prevalence, nutritional management strategies remain underdeveloped and insufficiently tailored to the specific needs of this population.

In particular, there is a notable lack of functional foods designed to address the gastrointestinal disorders, dietary restrictions, and sensory sensitivities commonly observed in children with ASD. The availability of specialized food products, especially gluten-free or reduced-gluten options, remains limited in the Tunisian market. As a result, families often rely on imported products that are expensive and not always adapted to local dietary habits and cultural preferences.

This situation highlights the need for innovative, accessible, and culturally appropriate nutritional solutions. It is within this context that our approach is positioned, aiming to valorize Tunisian cereals in the development of functional foods that may improve digestive comfort, nutritional intake, and ultimately the quality of life of children with ASD.

1.R&D METHODOLOGY

This study focused on the development and optimization of a gluten-free bread for individuals with autism spectrum disorder (ASD).

A mixture design of experiments (DOE) was implemented using Minitab to evaluate 13 formulations based on rice, oat, and lentil flours, while all other ingredients were kept constant to ensure experimental reliability.

Standardized processing conditions were applied for all trials, including controlled sourdough fermentation and baking.

3.ENSURE THE QUALITY

Quality assurance was achieved through the use of standardized raw materials, controlled processing conditions, and reproducible experimental procedures.

All formulations were produced under identical conditions, and evaluated using physicochemical analyses including texture, color, density, moisture content, and baking loss to ensure objective comparison and reliable selection of the optimal formulation.



4.CONVIVIAL MEAL

Beyond nutritional optimization, the developed bread was designed to support sensory acceptability and ease of consumption in daily life.

The formulation aims to improve palatability, digestive comfort, and dietary adherence, contributing to a more inclusive and enjoyable eating experience for children with ASD.

5. CONCLUSIONS & PERSPECTIVES

This study highlights the potential of Tunisian cereal-based ingredients in the development of functional gluten-free bread adapted to individuals with ASD.

The optimized formulations showed promising technological and nutritional properties. Future work should include extended sensory evaluation, nutritional bioavailability studies, and clinical validation to assess the impact on health and quality of life.