



## About

IWBC started on 2016, with a great success, attracting attendees from Brazil and other countries. In face of this, the Organizing Committee improved the Workshop into a Congress, which was firstly held on November 2018.

The topic of bioactive compounds is really transforming the modern view of Food Science and Nutrition in the World; bring attention to the food functionality related to disease prevention and health promotion. These new concepts are also calling attention from companies, with see opportunities for developing new products for emerging consumers.

The food scientists face new challenges in developing new products, which also should meet several exigencies from the consumers, like: ease to consume, practical, tasty, nutritious, among others. Furthermore, new technologies and new formulations are emerging to attend to this new demand, for consumers that look for products that could improve health and prevent diseases.

On the other hand, malnutrition is a big world challenge, including famine and bad nutrition habits. Food science and technology have a great opportunity in this scenario as well, for Universities, which promotes the training of cutting edge professionals; and for companies, which are responsible for the delivery of new products on the market.

Brazil and other countries should interact in order to find new solutions for innovation and experience exchange for the new food industry.

ICBC aims to bring new information for the knowledge frontiers for research, development and innovation.

## Support



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**NON-CONVENTIONAL EDIBLE PLANTS: TRADESCANTIA ZEBRINA BOSSE AND ALTERNANTHERA BRASILIANA L., AS SOURCES OF FOOD NATURAL COLOURANTS**

Eleomar de Oliveira Pires Jr; Tatiane Cristina Gonçalves de Oliveira; Eliana Pereira; Maria Inês Dias; Ricardo Calhelha; Marina Kostić; Marina Sokovic; Isabel Ferreira; Miguel Angel Prieto Lage; Cristina Caleja; Lillian Barros;  
 Food and health (AS)

## NON-CONVENTIONAL EDIBLE PLANTS: *TRADESCANTIA ZEBRINA* BOSSE AND *ALTERNANTHERA BRASILIANA* L., AS SOURCES OF FOOD NATURAL COLOURANTS

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**Keywords:** Anthocyanins; Betalains; Bioactive Compounds.

**Summary:** The industrial sector is tirelessly searching for more stable and natural colouring food matrices. Considering these demands, the present research investigated the characterization of their most promising compounds in terms of anthocyanin and betalain pigments, followed by the bioactive effect of aqueous extracts obtained from leaves of *Tradescantia zebrina* Bosse (ETZ) and *Alternanthera brasiliana* L. (EAB), respectively, with a view to its potential application in the industry. The chemical profile of EAB and ETZ extracts was obtained by HPLC-DAD-ESI/MS. The antioxidant activity of both extracts was evaluated by three different *in vitro* assays (CAA, reducing power, and DPPH), the antimicrobial activity was tested on a panel of twelve foodborne pathogenic microorganisms and the anti-inflammatory activity was analyzed in rat macrophage cells (RAW 264.7). Finally, cytotoxicity was tested in human tumor cells (MCF-7, NCI-H460, AGS, and CaCo) and toxicity in non-tumor cells (PLP2 and VERO) by the sulforhodamine B method. Two betalain derivatives were found in EAB samples and four anthocyanin derivatives in ETZ samples. The best promising antioxidant activity was showed in DPPH assay ( $EC_{50}$   $0.024 \pm 0.001$  mg/mL, ETZ), followed by reducing power ( $EC_{50}$   $0.53 \pm 0.01$  mg/mL, EAB) and CAA (inhibition: 46% EAB, 62% ETZ, 2000  $\mu$ g/mL), proving the antioxidant potential of the two extracts. The fungicidal activity of the extracts presented values of  $\leq 2$  mg/mL, and *Bacillus cereus* was the most sensitive bacteria, compared to other studied species. Only the EAB extract showed anti-inflammatory activity ( $IC_{50}$   $86 \pm 3$   $\mu$ g/mL). Promising cytotoxicity results were evidenced, namely for EAB in NCI-H460 tumor cell-line ( $80 \pm 8$   $\mu$ g/mL) and for ETZ in AGS tumor cell-line ( $30 \pm 2$   $\mu$ g/mL). None of the extracts showed toxicity for the maximum concentration tested ( $>400$   $\mu$ g/mL). Thus, it was evident that these plants proved to be a promising alternative for obtaining natural coloring pigments capable of being incorporated into the food industry.

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