Planta (2014) 240:899
DOI 10.1007/s00425-014-2185-0

FOREWORD

Special issue on anthocyanins

Stefan Martens · Nuno Mateus · Victor De Freitas

Published online: 8 October 2014

Anthocyanins are the most widespread group of pigmented flavonoids and are responsible for the red, purple, and blue colors of many fruits, vegetables and flowers. They are one of the most important natural pigments and more than 635 water-soluble anthocyanins have been identified in the plant kingdom up to now. About 90 % of the anthocyanin molecules are derived from the six major anthocyanidin compounds, cyanidin, delphinidin, malvidin, pelargonidin, peonidin and petunidin by glycosylations, acylations, methylation and hydroxylation. The biosynthetic pathway of anthocyanins and the genetic mechanisms regulating the biosynthesis have been thoroughly investigated in model and crop plants. The cellular transport and accumulation of anthocyanins have been well studied.

Anthocyanins can be found in almost all land plants. They function as phytoprotective substances, have a role in plant, animal interactions and as such are important in ecophysiology or plant defense mechanisms. Recently, interest in anthocyanins has strongly increased because of possible health benefits as dietary antioxidants. The beneficial effects, such as anti-inflammatory and anti-carcinogenic activity, cardiovascular disease prevention, obesity control, and diabetes alleviation properties for human health have been documented in many publications. The dietary consumption of anthocyanins is high due to their occurrence in fruits and vegetables.

On September 2013, the seventh International Workshop on Anthocyanins was held in Porto (Portugal), during which novel findings were presented on anthocyanin research, including synthesis and functions in plants or physical–chemical and biological properties related to health benefits. This meeting joined a large number of renowned scientists from all over the world (21 countries) presenting their latest research on anthocyanins. Some of the fascinating scientific contributions are presented in this issue of Planta highlighting anthocyanins.

S. Martens (✉)
Department of Food Quality and Nutrition Department, IASMA Research and Innovation Centre, Fondazione Edmund Mach (FEM), Via E. Mach 1, 38010 San Michele all'Adige (TN), Italy
e-mail: stefan.martens@fmach.it

N. Mateus · V. De Freitas
Department of Chemistry, Faculty of Sciences, Chemistry Investigation Centre (CIQ), University of Porto, 4169-007 Porto, Portugal