Anais da Academia Brasileira de Ciências
ISSN: 0001-3765
aabc@abc.org.br
Academia Brasileira de Ciências
Brasil

BONATTO, DIEGO

Landslide hazard mapping, DNA damage induced by sucrose and the biotechnology potential of sponge-associated bacteria communities

Anais da Academia Brasileira de Ciências, vol. 89, núm. 4, octubre-diciembre, 2017, pp. 2545-2546
Academia Brasileira de Ciências
Rio de Janeiro, Brasil

Available in: http://www.redalyc.org/articulo.oa?id=32754216001

Anais da Academia Brasileira de Ciências (2017) 89(4): 2545-2546
(Annals of the Brazilian Academy of Sciences)
Printed version ISSN 0001-3765 / Online version ISSN 1678-2690
http://dx.doi.org/10.1590/0001-37652017894
www.scielo.br/aabc

EDITORIAL NOTE

Landslide hazard mapping, DNA damage induced by sucrose and the biotechnology potential of sponge-associated bacteria communities

DIEGO BONATTO

Laboratório de Biologia Computacional e Molecular, Departamento de Biologia Molecular e Biotecnologia, Centro de Biotecnologia, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves, 9500, Prédio 43421, Sala 107, Caixa Postal 15005, 91509-900 Porto Alegre, RS, Brazil

Since its foundation in 1929, the major concern of Annals of The Brazilian Academy of Sciences (AABC) has been to promote scientific investigations in different research fields that could improve the welfare of our populations. In fact, the current number of AABC clearly displays this long-standing editorial tradition.

The growth of population in a worldwide scale and the social vulnerability of different human communities subjected to war, economy collapse, ethnical persecution and poverty impose a strong pressure to occupy multi-hazard environments, like flood plains and hill slopes subject to landslides (Sullivan-Wiley and Gianotti 2017). As human communities occupy unstable hill slope areas, activities like deforestation or irregular building sites increase the probability of landslide occurrence (Dai et al. 2002). Thus, it becomes imperative to assess the regional factors that could trigger a landslide event. The manuscript of Cerri et al. (2017) invokes a new geologic strategy to evaluate potential landslide regions in Serra do Mar based on soil fractures and foliation, and the slope geometry of the area. This method could improve the diagnostic of hazard in hill slope areas and directly impact the development of a framework for safe hill slope use for agricultural and urban purposes.

Carbohydrate consumption is a major public health concern nowadays, since it represents a large percentage of total energy intake in adults and children worldwide (Azaïs-Braesco et al. 2017, Wittekind and Walton 2014). Despite the development of nutritional guidelines that promotes the reduction of sugars in industrial processed foods, there are evidences that high sucrose western diets are linked to metabolic syndrome (Zhou et al. 2014), nonalcoholic fatty liver disease (Ishimoto et al. 2013), and cardiometabolic disease (DiNicolantonio and Lucan 2014). Unfortunately, the molecular effects of a high sucrose diet are less understood. Early efforts to understand the effects of carbohydrate metabolism and DNA damage were made using *Saccharomyces cerevisiae* as a model and a systems biology approach (Barea and Bonatto 2008), showing that reactive carbonyl species (RCS) provided by sugar metabolism could be linked to DNA damage. The manuscript of Franke et al. (2017) also addresses this question, and shows that the consumption of a high sucrose diet in rat model promotes DNA damage in hippocampus hence it contributes to the development of diabetes-associated neuropathologies.

Nowadays, marine sponges represent a new and very exciting biotechnology approach to explore a large reservoir of secondary metabolites and associated bacterial communities that produce biomolecules with important applications in health and industry (Bibi et al. 2017, Calcabrini et al. 2017). Considering the biological diversity of sponges existing in the Brazilian coast (Van Soest et al. 2012), the potential for discovery of new molecules for health and industry is very large, and this aspect is explored in the manuscript of Araújo et al. (2017) by studying the bacterial communities present in three marine sponges species collected in the coast of Rio de Janeiro, Brazil. Their data also fundament the opportunity for the study of a group of organisms that are essential for the conservation of marine ecosystems.

REFERENCES

ARAÚJO FV, NETTO MCM, AZEVEDO GP, JAYME MMA, NUNES-CARVALHO MC, SILVA MM AND CARMO FL. 2017. Ecology and biotechnological potential of bacterial community from three marine sponges of the coast of Rio de Janeiro, Brazil. An Acad Bras Cienc 89: ???-???.

AZAÏS-BRAESCO V, SLUIK D, MAILLOT M, KOK F AND MORENO LA. 2017. A review of total & added sugar intakes and dietary sources in Europe. Nutr Journal 16: 6.

BAREA F AND BONATTO D. 2008. Relationships among carbohydrate intermediate metabolites and DNA damage and repair in yeast from a systems biology perspective. Mutat Res 642: 43-56.

BIBI F, FAHEEM M, AZHAR EI, YASIR M, ALVI SA, KAMAL MA, ULLAH I AND NASEER MI. 2017. Bacteria from marine sponges: a source of new drugs. Curr Drug Metab 18: 11-15.

CALCABRINI C, CATANZARO E, BISHAYEE A, TURRINI E AND FIMOGNARI C. 2017. Marine sponge natural products with anticancer potential: an updated review. Mar Drugs 15: 310.

CERRI RI, REIS FAGV, GRAMANI MF, GIORDANO LC AND ZAINE JE. 2017. Landslides Zonation Hazard: relation between geological structures and landslides occurrence in hilly tropical regions of Brazil. An Acad Bras Cienc 89: ???-???.

DAI FC, LEE CF AND NGAI YY. 2002 Landslide risk assessment and management: an overview. Eng Geol 64: 65-87.

DINICOLANTONIO JJ AND LUCAN SC. 2014. The wrong white crystals: not salt but sugar as aetiological in hypertension and cardiometabolic disease. Open Heart 1: e000167.

FRANKE SIR, MOLZ P, MAI C, ELLWANGER JH, ZENKNER FF, HORTA JA AND PRÁ D. 2017. High consumption of sucrose induces DNA damage in male Wistar rats. An Acad Bras Cienc 89: ???-???.

ISHIMOTO T ET AL. 2013. High-fat and high-sucrose (western) diet induces steatohepatitis that is dependent on fructokinase. Hepatology 58: 1632-1643.

SULLIVAN-WILEY KA AND GIANOTTI AG. 2017. Risk perception in a multi-hazard environment. World Development 97: 138-152.

VAN SOEST RW, BOURY-ESNAULT N, VACELET J, DOHRMANN M, ERPENBECK D, DE VOOGD NJ, SANTODOMINGO N, VANHOORNE B, KELLY M AND HOOPER JN. 2012. Global Diversity of Sponges (Porifera). PLoS ONE 7: e35105.

WITTEKIND A AND WALTON J. 2014. Worldwide trends in dietary sugars intake. Nutr Res Rev 27: 330-345.

ZHOU X, HAN D, XU R, LI S, WU H, QU C, WANG F, WANG X AND ZHAO Y. 2014. A model of metabolic syndrome and related diseases with intestinal endotoxemia in rats fed a high fat and high sucrose diet. PLoS ONE 9: e115148.