



Luppolo: analisi qualitativa e strategie di valorizzazione nella filiera extra brassicola

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Luppolo

Luppolo (*Humus Lupulus* L.)

Produzione mondiale stimata:
≈ 150.000 tonnellate annue su
una superficie di quasi 92.000
ettari (FAO, 2017)

Utilizzato prevalentemente nella
produzione di birra:

- Profilo aromatico
- Gusto amaro



Luppolo: storia

Primi documenti che lo associano alla produzione di birra risalgono all'anno 1000 ma già dall'anno 200 ci sono prove che venisse coltivato dalla civiltà babilonese



Luppolo: composizione

- α -acidi: umulone, coumulone, adumulone

Gli α -acidi vanno incontro ad un processo di isomerizzazione quando il luppolo viene aggiunto al mosto in fase di bollitura



β -acidi: lupulone, colupulone, adlupulone



Luppolo: composizione

- Oli essenziali: l'aroma del luppolo nella birra è legato agli oli essenziali la cui composizione, estremamente eterogenea, varia a seconda della varietà



Luppolo: non solo birra..

Il luppolo sin dal passato è stato utilizzato come erba medicinale specialmente per le sue proprietà antibatteriche e sedative.

Ma ad oggi molte altre proprietà sono oggetto di studio nel settore farmaceutico, cosmetico e nutraceutico



Luppolo: non solo birra...



[Journal of Pest Science](#)

September 2015, Volume 88, [Issue 3](#), pp 583-592 | [Cite as](#)

Not just for beer: evaluation of spent hops (*Humulus lupulus* L.) as a source of eco-friendly repellents for insect pests of stored foods

[Authors](#)

[Authors and affiliations](#)

Stefano Bedini, Guido Flamini, Jessica Girardi, Francesca Cosci, Barbara Conti 

Original Paper

First Online: 07 February 2015

2

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Citations



Luppolo: non solo birra...

Mol Cancer Ther. 2002 Sep;1(11):959-69.

Cancer chemopreventive activity of Xanthohumol, a natural product derived from hop.

Gerhauser C¹, Alt A, Heiss E, Gamal-Eldeen A, Klimo K, Knauff J, Neumann I, Scherf HR, Frank N, Bartsch H, Becker H.

Author information

Abstract

Characterization and use of effective cancer chemopreventive agents have become important issues in public health-related. Aiming to identify novel potential chemopreventive agents, we have established an interrelated series of bioassay systems to study molecular mechanisms relevant for the prevention of tumor development. We report anticarcinogenic properties of Xanthohumol, a prenylated chalcone from hop (*Humulus lupululus* L.), which inhibits cell proliferation, cell cycle progression, and progression stage enzymes involved in carcinogen metabolism. Xanthohumol scavenges hydroxyl- and peroxy radicals, and its mechanism of action demonstrates anti-



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RESEARCH LETTERS

Use of hop cone extract obtained under supercritical CO₂ conditions for producing antibacterial all-purpose cleaners

Tomasz Wasilewski, Dominik Czerwonka ✉, Urszula Piotrowska, Artur Seweryn, Zofia Nizioł-Łukaszewska & Marcin Sobczak

Pages 419-428 | Received 01 Mar 2018, Accepted 17 Sep 2018, Published online: 08 Oct 2018

Download citation | <https://doi.org/10.1080/17518253.2018.1526975>

Check for updates



Luppolo

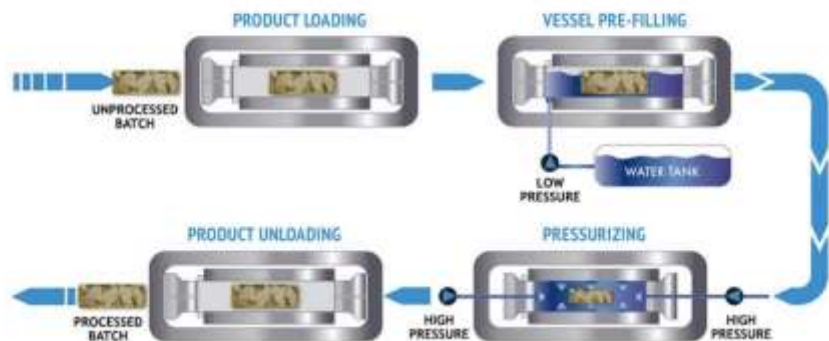


Active ingredient



Encapsulated Payload
Stabilised Aqueous Emulsion

Diagram of operation of a HPP unit

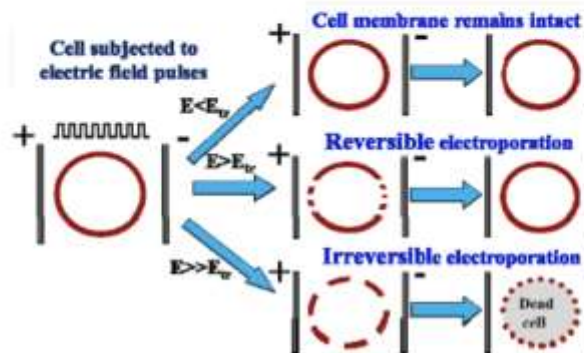


Pulse electric field (PEF)



The degree of electroporation, or electroporation, depends on the potential difference across a membrane, or the transmembrane potential, u_m . Electroporation requires some threshold value of u_m , typically, 0.5-1.5V

Three possible situations



Lupnolo

Changes in the composition of hop secondary metabolites induced by high hydrostatic pressure

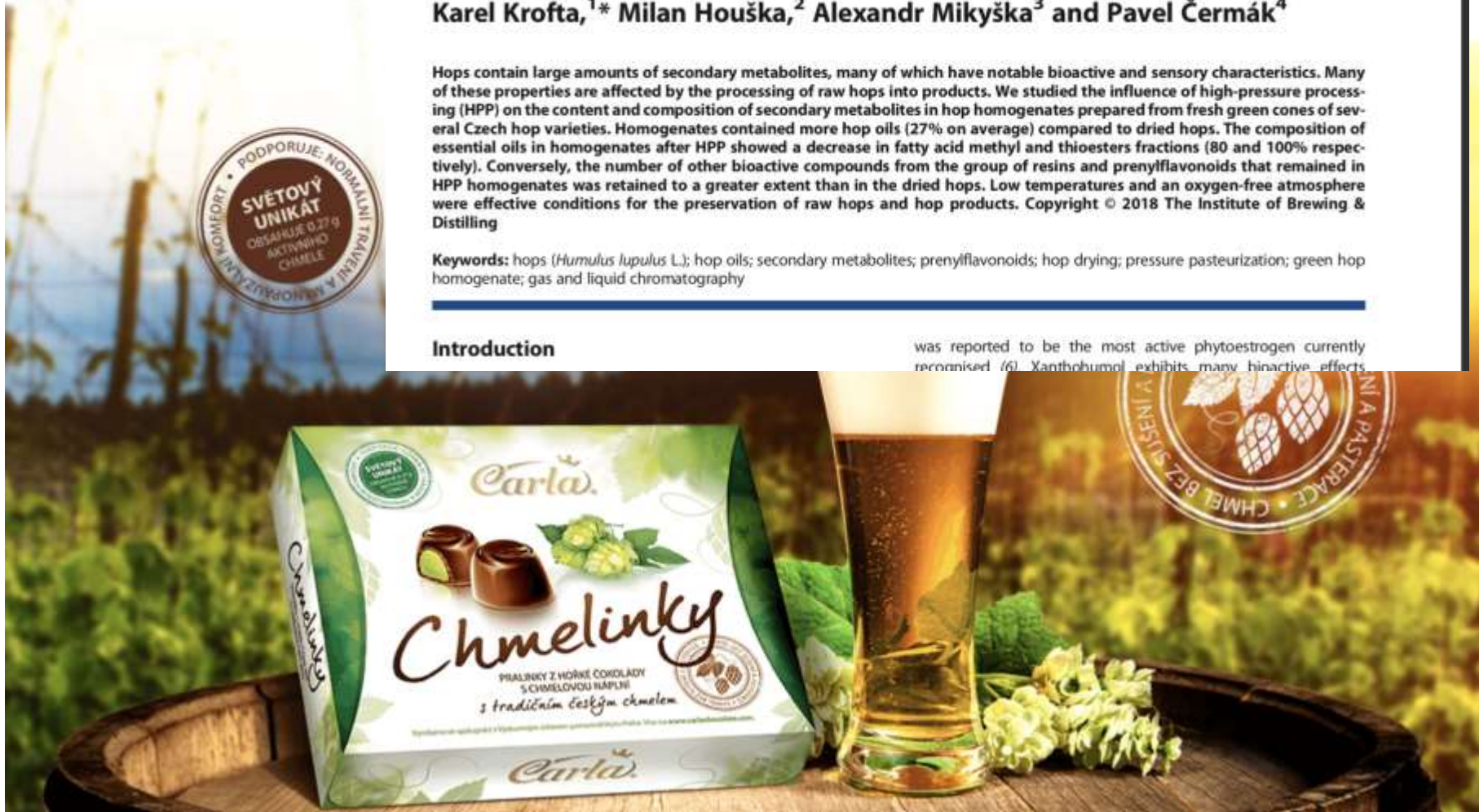
Karel Krofta,^{1*} Milan Houška,² Alexandr Mikyška³ and Pavel Čermák⁴

Hops contain large amounts of secondary metabolites, many of which have notable bioactive and sensory characteristics. Many of these properties are affected by the processing of raw hops into products. We studied the influence of high-pressure processing (HPP) on the content and composition of secondary metabolites in hop homogenates prepared from fresh green cones of several Czech hop varieties. Homogenates contained more hop oils (27% on average) compared to dried hops. The composition of essential oils in homogenates after HPP showed a decrease in fatty acid methyl and thioesters fractions (80 and 100% respectively). Conversely, the number of other bioactive compounds from the group of resins and prenylflavonoids that remained in HPP homogenates was retained to a greater extent than in the dried hops. Low temperatures and an oxygen-free atmosphere were effective conditions for the preservation of raw hops and hop products. Copyright © 2018 The Institute of Brewing & Distilling

Keywords: hops (*Humulus lupulus* L.); hop oils; secondary metabolites; prenylflavonoids; hop drying; pressure pasteurization; green hop homogenate; gas and liquid chromatography

Introduction

was reported to be the most active phytoestrogen currently recognised (6). Xanthohumol exhibits many bioactive effects



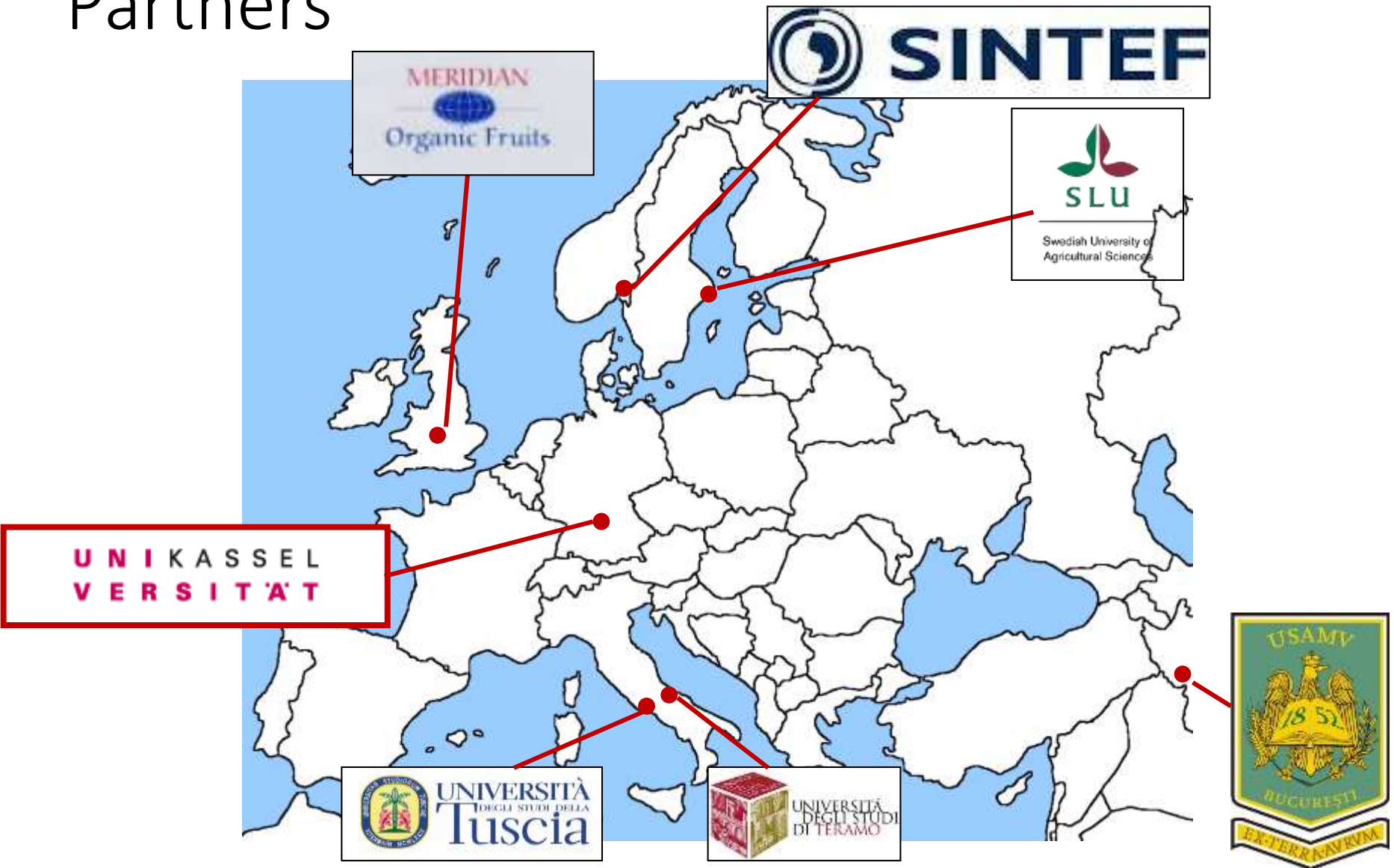


SusOrganic

Development of quality standards and optimised processing methods for organic produce

Prof.ssa Paola Pittia

Partners



Case studies

1. Drying optimisation of hops



2. Use of hyperspectral imaging to meat drying



3. Freezing of apples: effects of pre-treatments



Thank you for your attention