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2021 INTERNATIONAL CONFERENCE

Integrated and innovative key actions for mycotoxin management in the food and feed chain

BARI, 9-12 November 2021

https://mycotwinbari2021.mycokey.eu/

BOOK of ABSTRACTS

ISBN: 978-88-8080-224-2 - DOI: https://doi.org/10.48257/ACBA01

ISM International Society for Mycotoxicology

Published by

Institute of Sciences of Food Production-National Research Council (CNR-ISPA)

Digital book by
Domenico GENCHI
Institute of Sciences of Food Production, (CNR-ISPA), Italy

ISBN digital version: 978-88-8080-221-1
ISBN printed version: 978-88-8080-224-2

DOI: https://doi.org/10.48257/ACBA01

Session 10 November 2021

S4 – Food and feed Remediation, Intervention & Processing

EFFECT OF MILLING PROCESSES ON MONILIFORMIN DISTRIBUTION IN WHEAT AND MAIZE FRACTIONS IN COMPARISON TO THE TARGET MYCOTOXINS DEOXYNIVALENOL AND FUMONISINS

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The effect of milling processes on moniliformin (MON) distribution in wheat and maize milling fractions, in comparison to the target mycotoxins deoxynivalenol (DON) and fumonisins (FBs), was evaluated in 1 wheat and 3 maize commercial lots, subjected to roller-milling technology. The sampled fractions of each process were collected according to European Commission Regulation (EC) No 401/2006.
Through maize dry-milling, in comparison to the pre-cleaned whole grain:

- the cleaning step on average reduced the FBs, MON and DON_{TOT} (sum of DON, deoxynivalenol-3-glucoside, 3-acetyldeoxynivalenol, 15-acetyldeoxynivalenol) contents by -47%, -45% and -35%, respectively.
- the animal feed flour increased the FBs, MON and DON_{TOT} contents, by 3.0, 1.6 and 2.1 times, respectively.
- the germ presented reduced FBs (-58%) and MON (about -40%) contents, while DON_{TOT}, increased by more than 2.5 times.
- within endosperm products (maize flour, break meal and pearl meal), the maize flour (fraction with the lowest particle size) showed the smallest reduction (-24% for FBs, -41% for MON and -61% for DON_{TOT}), underlining an inverse relationship with the particle size.

Through wheat milling, DON_{TOT} and MON were reduced respectively by -38% and -15% in refined flour, and by -41% and -33% in germ, while increased their content in bran (+177% and 65%), shorts (+113% and +77%) and middlings (+94% and +18%).
The weaker decontamination of MON in maize and wheat milling fractions and the increase of DON_{TOT} in the maize germ points to a higher risk of exposure for the end consumers.

This research was financially supported by the Project ALIMAIS and WHITEGRITS (Regione Piemonte, Rural Development Programme FEARS. 2007-2013) and ACRYSAFE Regione Piemonte (POR FESR 2014–2020).