

Accepted Manuscript

Review

Ultrasound assisted extraction of food and natural products. Mechanisms, techniques, combinations, protocols and applications A Review

Farid Chemat, Natacha Rombaut, Anne-Gaëlle Sicaire, Alice Meullemiestre, Anne-Sylvie Fabiano-Tixier, Maryline Abert-Vian

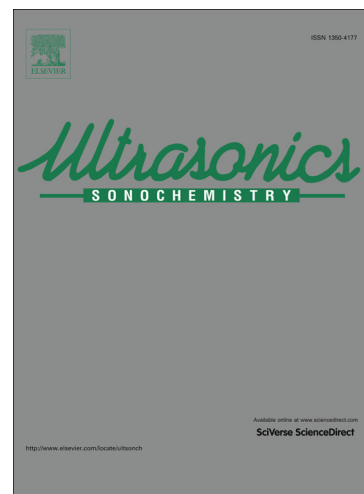
PII: S1350-4177(16)30235-8
DOI: <http://dx.doi.org/10.1016/j.ultsonch.2016.06.035>
Reference: ULTSON 3292

To appear in: *Ultrasonics Sonochemistry*

Received Date: 4 April 2016
Revised Date: 9 June 2016
Accepted Date: 23 June 2016

Please cite this article as: F. Chemat, N. Rombaut, A-G. Sicaire, A. Meullemiestre, A-S. Fabiano-Tixier, M. Abert-Vian, Ultrasound assisted extraction of food and natural products. Mechanisms, techniques, combinations, protocols and applications A Review, *Ultrasonics Sonochemistry* (2016), doi: <http://dx.doi.org/10.1016/j.ultsonch.2016.06.035>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 Ultrasound assisted extraction of food and natural products.

2 Mechanisms, techniques, combinations, protocols and applications.

3 A Review.

4
5 Farid Chemat ^{1*}, Natacha Rombaut ¹, Anne-Gaëlle Sicaire ¹, Alice Meullemiestre ¹,
6 Anne-Sylvie Fabiano-Tixier ¹, Maryline Abert-Vian ¹

7
8 ¹ Université d'Avignon et des Pays de Vaucluse, INRA, UMR408, GREEN Team Extraction,
9 F-84000 Avignon, France

10 E-mail: Farid.chemat@univ-avignon.fr

11
12 **Abstract**

13 This review presents a complete picture of current knowledge on ultrasound-assisted
14 extraction (UAE) in food ingredients and products, nutraceuticals, cosmetic, pharmaceutical
15 and bioenergy applications. It provides the necessary theoretical background and some details
16 about extraction by ultrasound, the techniques and their combinations, the mechanisms
17 (fragmentation, erosion, capillarity, detexturation, and sonoporation), applications from
18 laboratory to industry, security, and environmental impacts. In addition, the ultrasound
19 extraction procedures and the important parameters influencing its performance are also
20 included, together with the advantages and the drawbacks of each UAE techniques.
21 Ultrasound-assisted extraction is a research topic, which affects several fields of modern
22 plant-based chemistry. All the reported applications have shown that ultrasound-assisted
23 extraction is a green and economically viable alternative to conventional techniques for food
24 and natural products. The main benefits are decrease of extraction and processing time, the
25 amount of energy and solvents used, unit operations, and CO₂ emissions.

26
27 **Keywords:** Ultrasound-assisted extraction; mechanisms; hybrid techniques;
28 safety and security; green impacts; industrial application.

29

Download English Version:

<https://daneshyari.com/en/article/7703649>

Download Persian Version:

<https://daneshyari.com/article/7703649>

[Daneshyari.com](https://daneshyari.com)