

Intensifying chitin hydrolysis by adjunct treatments – an overview

Article

Accepted Version

Zainal Abidin, M., Junqueira-Gonçalves, M. P., Khutoryanskiy, V. and Niranjana, K. (2017) Intensifying chitin hydrolysis by adjunct treatments – an overview. *Journal of Chemical Technology and Biotechnology*, 92 (11). pp. 2787-2798. ISSN 0268-2575 doi: <https://doi.org/10.1002/jctb.5208> Available at <http://centaur.reading.ac.uk/68864/>

It is advisable to refer to the publisher's version if you intend to cite from the work. See [Guidance on citing](#).

To link to this article DOI: <http://dx.doi.org/10.1002/jctb.5208>

Publisher: Wiley

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the [End User Agreement](#).

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

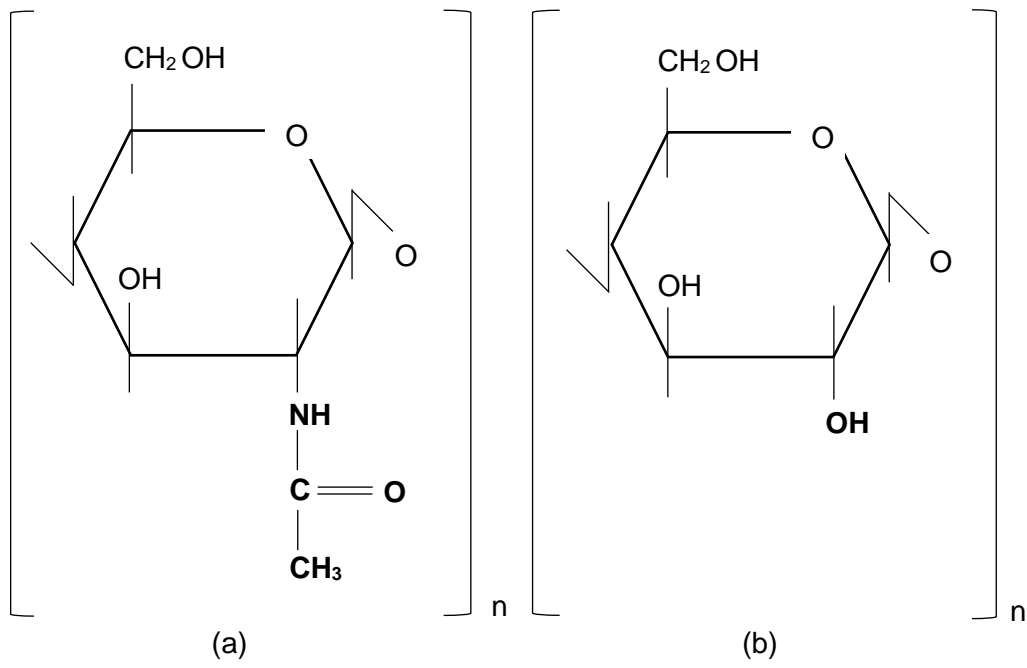


Figure 1. Chemical structures of: (a) Chitin and (b) Cellulose

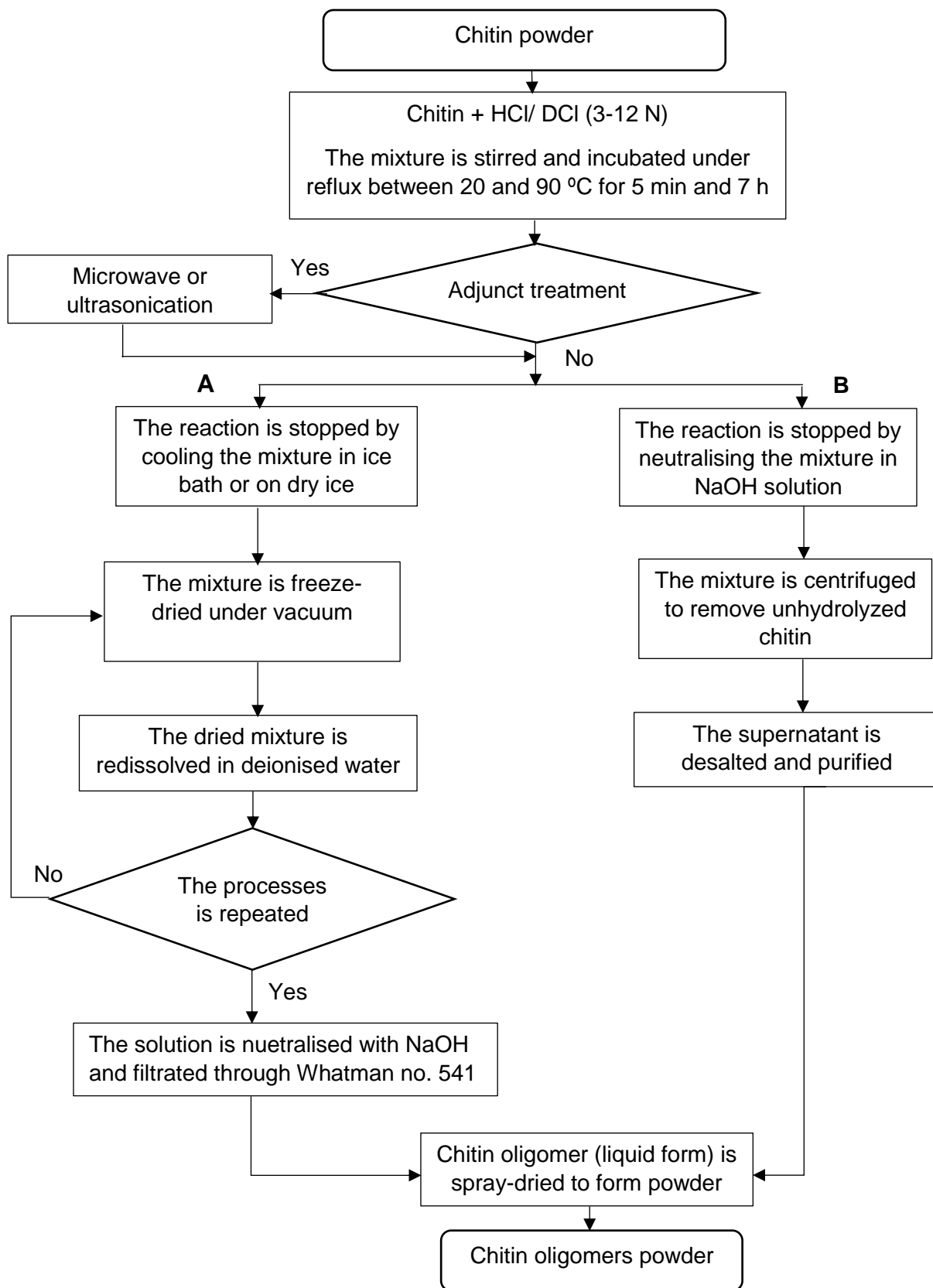


Figure 2. Process flowsheet for acid hydrolysis of chitin with or without adjunct treatment. A and B represent different method for recovering chitin oligomers from the reaction mixture. ^{27,30,32,40-42,44,45}

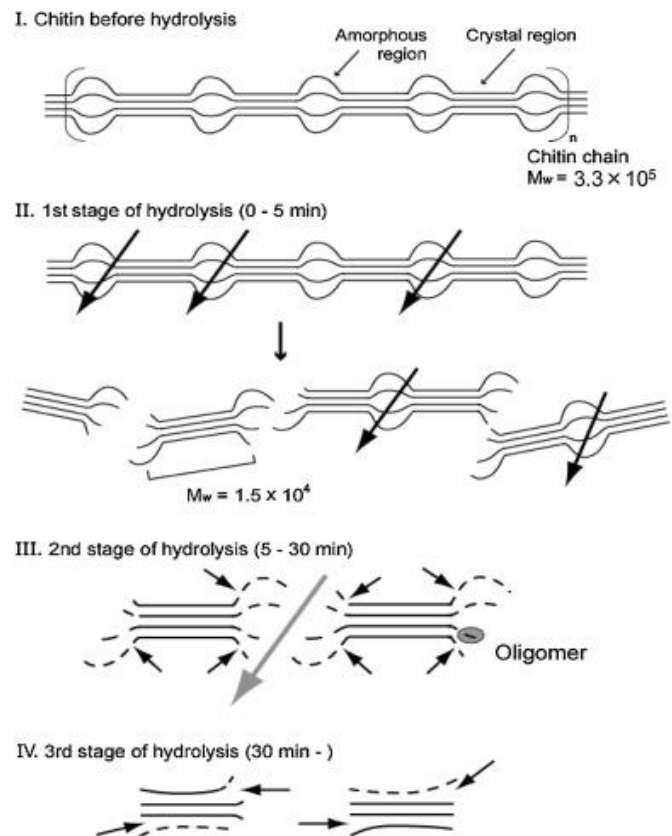


Figure 3. Possible mechanism of chitin hydrolysis in concentrated HCl. Reprinted with permission from Kazami et al.⁴⁵ Copyright 2015 Elsevier.

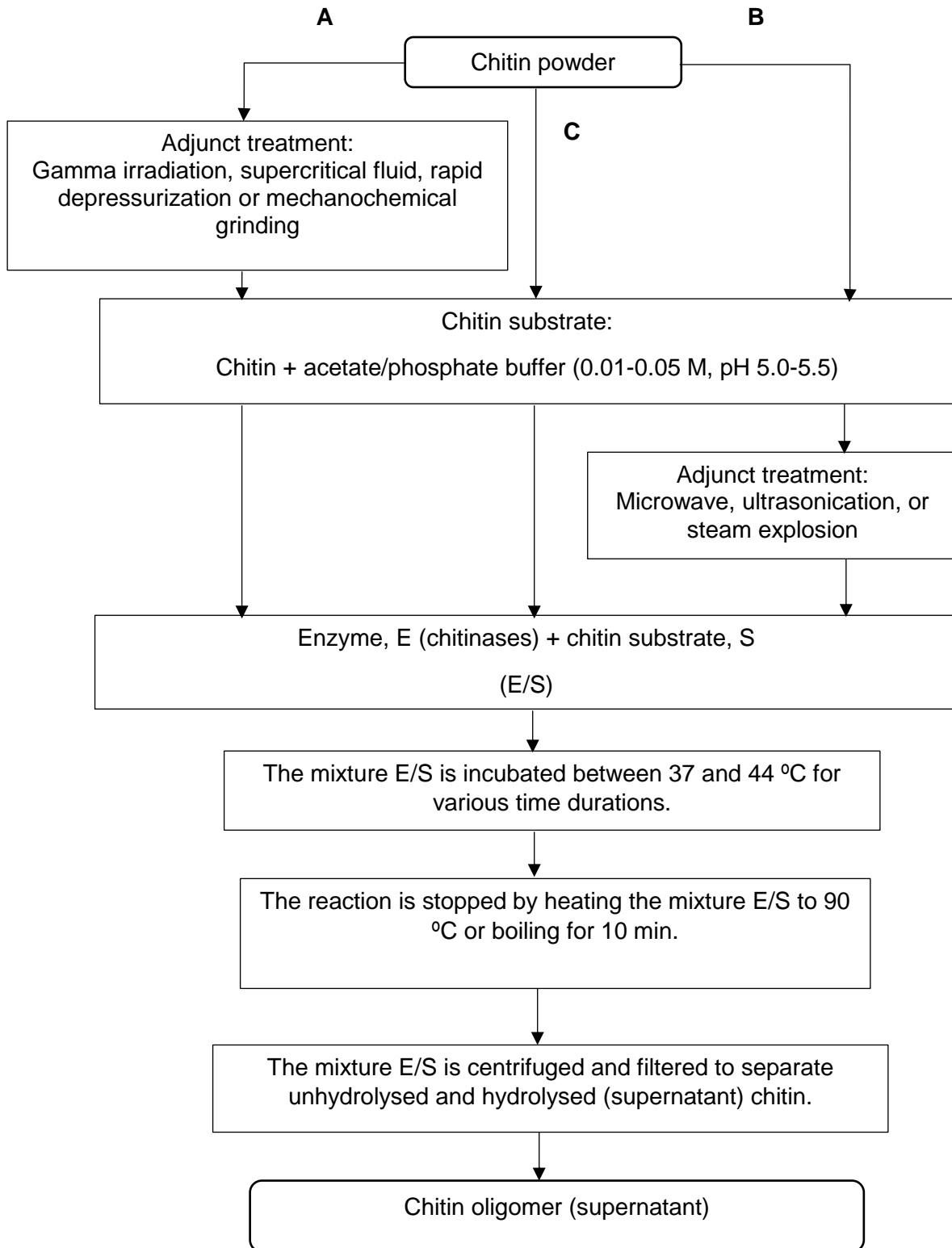


Figure 4. Flow diagram for the enzymatic hydrolysis on chitin with or without adjunct treatment. A and B represent treatment of chitin powder and chitin substrate, respectively, and C represents no treatment prior to hydrolysis. ^{31,33,35,36-38}

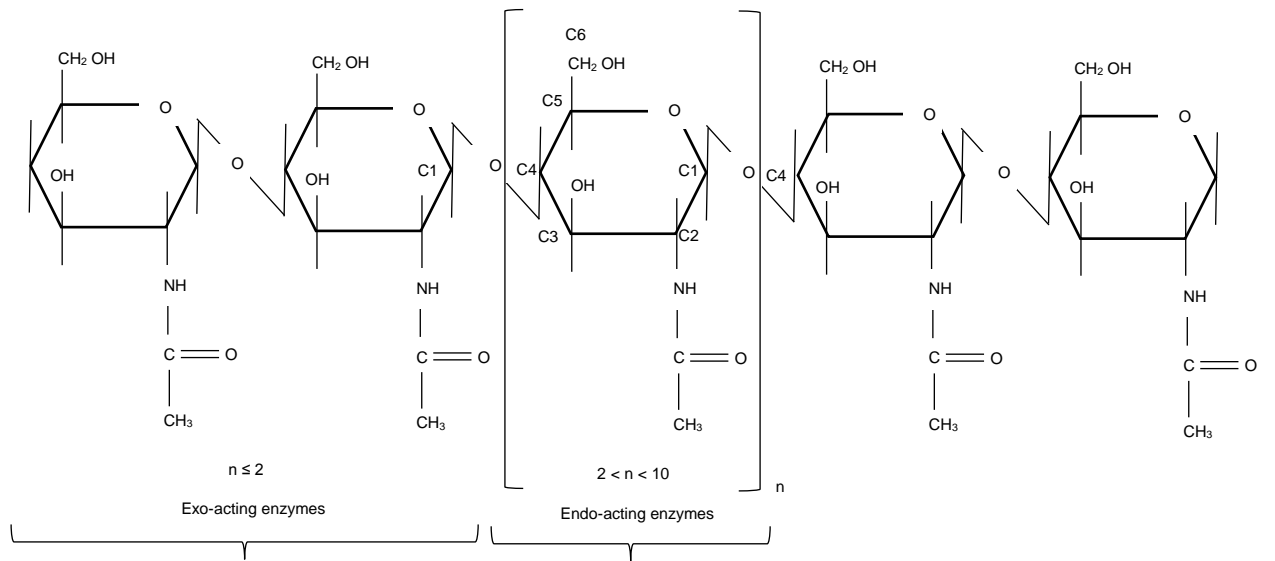


Figure 5. Structure of chitin polymer, and mechanisms of endo-acting and exo-acting enzymes on the chitin during hydrolysis.

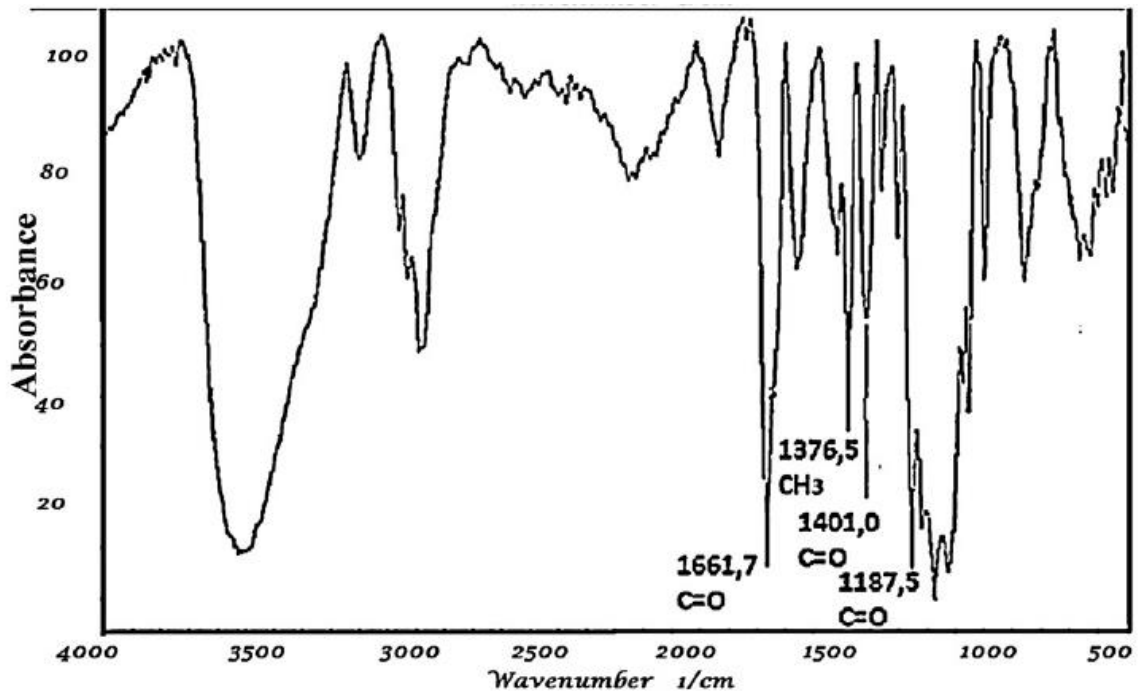


Figure 6. FT-IR spectrum of chitin oligomers. Reprinted with permission from Ngo et al.³⁰ Copyright 2008 Elsevier.

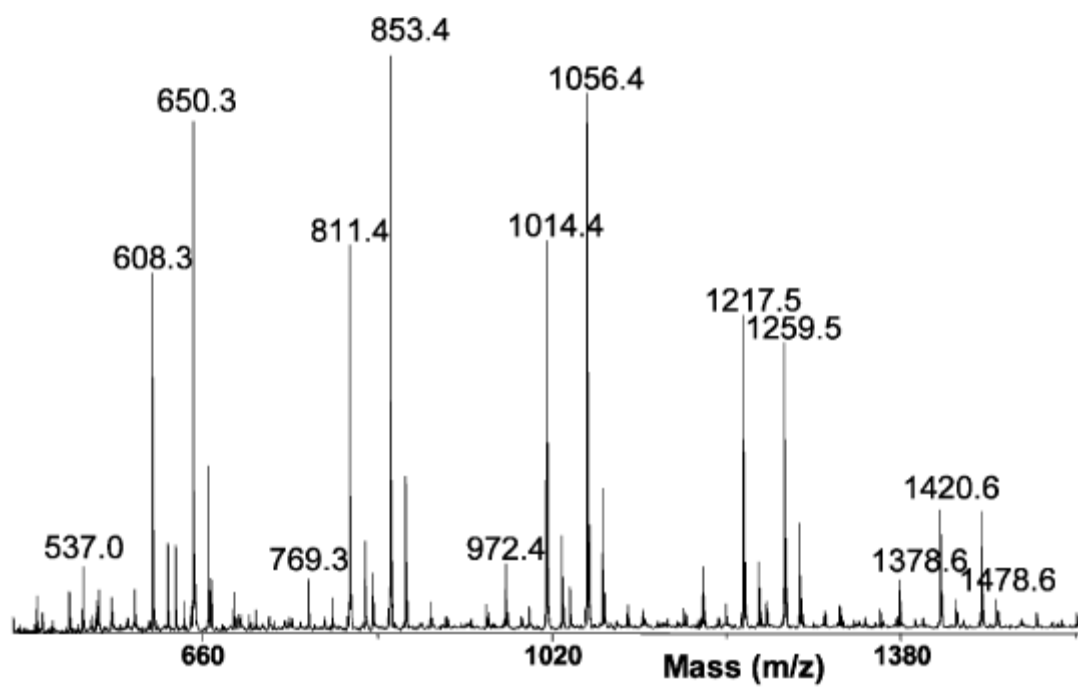


Figure 7. MALDI-TOF spectrum of the chitin oligomers with DA 90 %. Reprinted with permission from Trombotto et al.⁴² Copyright 2008 American Chemical Society.