

UNIVERSITI TEKNOLOGI MARA

**EFFECTS OF MICROWAVE
ON DRUG RELEASE RESPONSES OF
SPRAY-DRIED ALGINATE MICROSPHERES**

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Thesis submitted in fulfillment of the requirements
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Candidate's Declaration


I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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ABSTRACT

The behavior of rigid guluronic acid-rich (MG) and flexible mannuronic acid-rich (MC) alginate in controlling drug release responses of spray-dried microspheres against microwave was investigated using sodium diclofenac as model water-soluble drug. MC microspheres required a shorter period of microwave irradiation to reduce drug release extent than MG microspheres. In response to microwave, the drug release profiles of 1:1 MG-MC microspheres resembled MC microspheres. The state of polymer-polymer and drug-polymer interaction via O-H and/or N-H moiety of microspheres was affected by alginate chain flexibility under the influence of microwave. It then governed the drug release responses of microspheres.

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