



Your browser is outdated

Update your browser to view ScienceDirect correctly.

[Check supported brow... ↗](#)

Your technical details and browser version:

Request ID: 96f56675a844b629-FRA

IP: 178.214.4.5

UTC time: 2025-08-15T02:53:12+00:00

Browser: Mozilla/5.0 (X11; Linux x86_64) Miniature.io/6.0

AppleWebKit/537.36 (KHTML, like Gecko) QtWebEngine/5.12.4

Chrome/69.0.3497.128 Safari/537.36