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## Green extraction protocols of *Mitragyna speciosa* leaves leading to a possible large scale production

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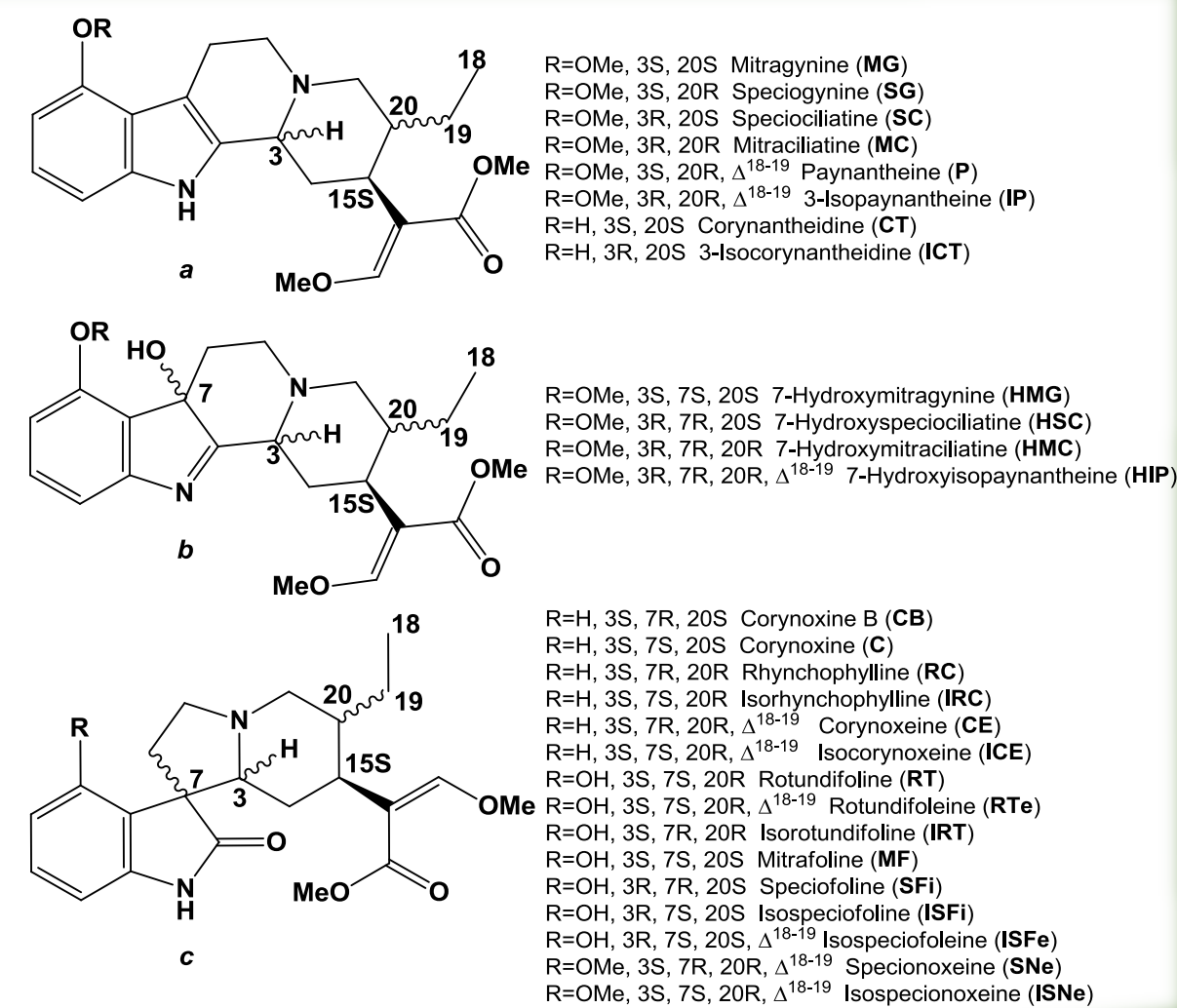
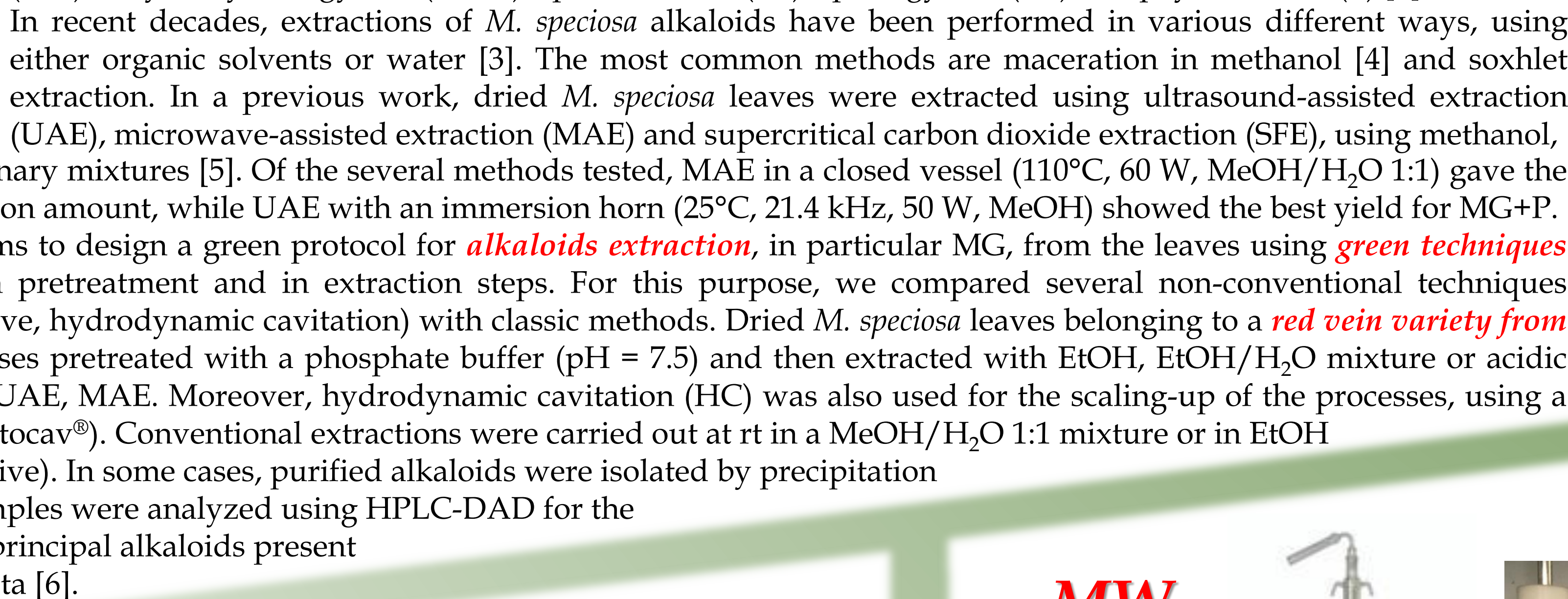
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**Figure 2:** ESI<sup>+</sup> total ion (first trace) and single ion chromatograms of Red Bali

**US** Titanium horn  
21 kHz, 250 W

*Pilot scale reactor  
Rotocav®  
3000 rpm, 3 kW*

## Identification and quantification of *MG+P* and *total alkaloids* at 222 nm

- ❖ Best extraction yields and highest MG+P mg/g plant amounts were observed with UAE (with pretreatment using EtOH, without it using acidic H<sub>2</sub>O)
- ❖ Highest MG+P w/w % in the extract were obtained using EtOH or EtOH/H<sub>2</sub>O 7:3 mixture (UAE) with HC-assisted pretreatment
- ❖ UAE, both with titanium horn or cup horn, increased dramatically the solubility of apolar alkaloids (in particular, MG+P) in acidic H<sub>2</sub>O
- ❖ MW using acidic H<sub>2</sub>O did not affect positively extraction yields and alkaloids amounts in the extract
- ❖ Total alkaloids content (w/w % in the extract or mg/g plant) obtained in ethanolic UAE were comparable to exhaustive ethanolic conventional protocol, while H<sub>2</sub>O (pH 3) afforded alkaloid amounts quite far from the purified sample obtained with MeOH/H<sub>2</sub>O conventional extraction

Pur. Alk. = purified alkaloids, MG+P/Talk = mitragynine and paynanteine amount on total alkaloids

- ❖ COMPARABLE YIELDS FOR UAE TO CONVENTIONAL PROTOCOLS
- ❖ LOWER AMOUNTS OF SOLVENTS USED, LOWER EXTRACTION TIMES AND TEMPERATURES
- ❖ GENERALLY INCREASED PURITY OF FINAL EXTRACT WITH THE PHOSPHATE BUFFER PRETRATMENT
- ❖ POSSIBLE EASY SCALE-UP OF UAE USING THE HC REACTOR

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