

5TH INTERNATIONAL CAPARICA CHRISTMAS
CONFERENCE ON
SAMPLE TREATMENT

15TH - 18TH NOVEMBER 2021
CAPARICA | PORTUGAL

BOOK OF ABSTRACTS

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5th International Caparica Christmas Conference
on Sample Treatment

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Hotel Aldeia dos Capuchos Golf & SPA

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P.04 – Antibacterial and Antibiofilm Activity of Flavonoid and Saponin Derivatives from *Atriplex tatarica* against *Pseudomonas aeruginosa*

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A new flavonoid glucoside derivative, patuletin 3-*O*-(2-*O*-feruloyl)- β -D-glucuronopyranosyl-(1 \rightarrow 2)- β -D-glucopyranoside, named atriplexin IV (**1**), and three new triterpenoid saponin derivatives, two sulfonated, β -D-glucopyranosyl-3-*O*-(2-*O*-sulfo- β -D-galactopyranosyl)-(1 \rightarrow 2)- α -L-arabinopyranoside-30-*alolean-12-en-28-oate* (**2**), named atriplexogenin I, β -D-glucopyranosyl-3-*O*-(2-*O*-sulfo- β -D-galactopyranosyl)-(1 \rightarrow 2)- α -L-arabinopyranoside)-30-*hydroxyolean-12-en-28-oate* (**3**), named atriplexogenin II, and β -D-glucopyranosyl-3-*O*-(β -D-glucopyranosyl-(1 \rightarrow 2)- β -D-galactopyranosyl-(1 \rightarrow 2)- α -L-arabinopyranoside)-30-*alolean-12-en-28-oate* (**4**), named atriplexogenin III, were isolated by silica gel column and semipreparative HPLC chromatography from the *n*-butanol extract of the salt marsh plant *Atriplex tatarica*. In addition, two known secondary metabolites, patuletin 3-*O*- β -D-apiofuranosyl-(1 \rightarrow 2 \prime)- β -D-glucopyranoside (**5**) and patuletin 3-*O*-5 \prime -*O*-feruloyl- β -D-apiofuranosyl-(1 \rightarrow 2 \prime)- β -D-glucopyranoside (**6**), were isolated for the first time from *A. tatarica*. The structures of the isolated compounds were elucidated by 1D and 2D NMR, HRESIMS, IR, and UV data. Antibacterial activity by the microdilution method and antibiofilm activity against *P. aeruginosa* were assessed. The best activity against *Micrococcus flavus* and *Pseudomonas aeruginosa* showed compound **1**, while against *Listeria monocytogenes* and *Escherichia coli* the strongest activity was shown by compound **5**. Isolated saponins (**2-4**) exhibited a more pronounced biofilm inhibition activity than flavonoid glycosides (**1, 5-6**). The best anti-biofilm activity showed compound **2**.

References

- [1] W. Bylka, Acta Physiol. Plant., 26 (4) (2004), 393–398.
- [2] M. Aritomi, T. Komori, T. Kawasaki, Phytochemistry 25 (1985), 231–234.

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