

**SL13 New trends in the biochemistry and pharmacology of methoxylated lipids**

N. M. Carballeira, M. Pagán, J. Alicea and D. Ortiz

Department of Chemistry, University of Puerto Rico, Río Piedras Campus, PO Box 23346, San Juan, Puerto Rico 00931-3346.

The biochemistry and pharmacology of methoxylated lipids continues to attract much attention, in particular that of alkylglycerol ethers and fatty acids bearing the methoxy group in the alkyl chain. An interesting group of methoxylated lipids are the  $\alpha$ -methoxylated fatty acids since the only naturally occurring  $\alpha$ -methoxy fatty acids known to date are those derived from the phospholipids of sponges (1-4). We examined the lipid composition of a series of Caribbean sponges (*Callyspongia fallax*, *Amphimedon complanata*, *Agelas dispar*) and were successful in identifying a novel series of 2-methoxylated fatty acids ranging in chain-length between C<sub>14</sub> and C<sub>18</sub> (2-4). These fatty acids included linear chain saturated 2-methoxylated fatty acids between C<sub>14</sub>-C<sub>18</sub>, a series of novel *iso-anteiso* branched-chain 2-methoxylated acids with chain lengths between C<sub>15</sub>-C<sub>17</sub>, and also an unprecedented series of  $\Delta 6$  normal chain 2-methoxylated fatty acids with chainlengths between C<sub>14</sub> and C<sub>18</sub>. Structure characterization was accomplished by means of gas chromatography retention times, gas chromatography-mass spectrometry, and total synthesis. These findings revealed unprecedented fatty acid biosynthetic sequences in nature. The antiviral activity (against HIV-1) of the 2-methoxytetradecanoic acid, the shortest  $\alpha$ -methoxylated fatty acid known to date, will be discussed as well as its potential as a *N*-myristoyltransferase inhibitor. In addition, some of the  $\alpha$ -methoxylated fatty acids show selective antimicrobial activity against Gram-positive bacteria (MIC = 0.35  $\mu$ mol/ml). Our present knowledge in this field, in particular the natural occurrence, biological activity, and synthesis of this interesting group of lipids, will be discussed.

**Acknowledgements:** This work was supported by a grant from the National Institutes of Health (grant no. S06GM08102). We thank Steven R. Turk (NIH-NIAID) and the Southern Research Institute for the antiviral testing. J. Alicea thanks Pfizer Inc. for an undergraduate fellowship.

**References:** 1. Carballeira, N. M. (2002) *Prog. Lipid Res.*, in press. 2. Carballeira, N. M., Alicea, J. (2002) *Lipids*, 37: 305-308. 3. Carballeira, N. M., Pagán, M. (2001) *J. Nat. Prod.*, 64: 620-623. 4. Carballeira, N. M., Alicea, J. (2001) *Lipids*, 36: 83-87.

**SL14 Pentameric ellagitannins from *Monochaetum multiflorum* (Bompl.) Naudin, Melastomataceae**José Hipólito Isaza Martínez<sup>a</sup>, Hideyuki Ito<sup>b</sup> and Takashi Yoshida<sup>b</sup>

<sup>a</sup> Universidad Tecnológica de Pereira, Facultad de Tecnología, Escuela de Química, Grupo Polifenoles UTP, La Julita, A.A. 097, Pereira, Colombia. <sup>b</sup> Okayama University, Faculty of Pharmaceutical Sciences, Dept. Of Pharmacognosy, Tsushima Naka, 700-0082, Okayama, Japan.

*Monochaetum multiflorum* (Bompl.) Naudin, a shrub endemic to Colombia, has been traditionally used as a topically applicable remedy against infections and skin injuries. A previous paper reported the isolation of nobotanin S (**1**) (tetramer), and the first pentameric hydrolyzable tannin, named melastoflorin A (**2**) (**1**).

This communication describes the isolation and structure elucidation of two new pentameric ellagitannins, melastoflorin B (**3**), [ $\alpha$ ]<sub>D</sub> +62.9°, C<sub>184</sub>H<sub>128</sub>O<sub>118</sub>, and melastoflorin C (**4**), [ $\alpha$ ]<sub>D</sub> +60.0°, C<sub>198</sub>H<sub>134</sub>O<sub>126</sub>. Although the glucose proton signals in the <sup>1</sup>H-NMR spectrum were complicated owing to overlapping around 5~5.2 ppm region, full assignments were unambiguously achieved by a combination of <sup>1</sup>H-<sup>1</sup>H shift correlation spectroscopy (COSY), total correlation spectroscopy (TOCSY), <sup>1</sup>H-<sup>1</sup>H *J*-resolved, GHMQC and HMBC spectra.

**Acknowledgements:** Ministry of Education, Science, Sport and Culture of Japan.

**References:** 1. Isaza M., J. H. et al. (2001) *Heterocycles*, 55(1):29-32

