

CORRECTION

Lipids from Flax Fibers and Their Fate in Alkaline Pulping, by Ana Gutiérrez* and José C. del Río. *J. Agric. Food Chem.* 2003, 51, 4965.

We regret that due to an unfortunate error during the writing of the paper, the chain lengths of the waxes identified were incorrectly assigned in the text. The error arises from **Figure 3**, which shows the mass spectra of, supposedly, waxes C₅₀, C₅₂, and C₅₄, but that in fact corresponds to waxes C₄₄, C₄₆, and C₄₈, as can be clearly deduced from the molecular ions at *m/z* 648, 676, and 704, respectively. The amended **Figure 3** is shown here. Therefore, throughout the paper, the chain lengths of the waxes have been misidentified (with six carbon atoms more than really corresponds).

In the paper it is said that waxes were identified in flax fibers (and in flax pulps) in the range from C₄₆ to C₆₀, with the C₅₀, C₅₂, and C₅₄ analogues being the most abundant; in fact, it must state that they were identified in the range from C₄₀ to C₅₄, with the C₄₄, C₄₆, and C₄₈ analogues being the most abundant, as is shown in the amended **Figures 1 and 4** and **Tables 1 and 2**. The error affects only the chain length of the esterified fatty alcohol moiety, which is six carbon atoms shorter than that shown in the paper, and the distribution of which, from C₁₆ to C₃₂ and maximum at C₂₈, now parallels that of the free fatty alcohol series, as shown in the amended **Figure 2**.

Table 1. Amended Composition of Lipids (mg/100 g) from Flax (*L. usitatissimum*) Fibers and Their Alkaline Pulps (Only the Compositions of Waxes Have Been Corrected)

| compound | flax pulps | | | flax pulps | | | |
|---------------------|------------|----------|---------|---------------------|----------|---------|------|
| | flax | kappa 28 | kappa 6 | flax | kappa 28 | kappa 6 | |
| | waxes | | | | | | |
| total | 168 | 213 | 11.4 | wax C ₄₇ | 0.91 | 0.00 | 0.00 |
| wax C ₄₀ | 0.70 | 0.55 | 0.16 | wax C ₄₈ | 30.0 | 23.9 | 1.04 |
| wax C ₄₂ | 4.86 | 8.51 | 0.80 | wax C ₅₀ | 8.16 | 1.85 | 0.39 |
| wax C ₄₄ | 39.3 | 67.6 | 4.37 | wax C ₅₂ | 3.71 | 0.73 | 0.00 |
| wax C ₄₅ | 0.82 | 0.55 | 0.00 | wax C ₅₄ | 1.28 | 0.00 | 0.00 |
| wax C ₄₆ | 78.1 | 109.1 | 4.63 | | | | |

Although the error affects all figures and tables, the rest of the data and conclusions are correct. The amended figures and tables are shown here.

Table 2. Amended Composition of the Different Waxes (mg/100 g) Identified in Flax (*L. usitatissimum*) Fibers and Their Alkaline Pulps

| waxes fatty acid: fatty alcohol | flax pulp | | | waxes fatty acid: fatty alcohol | flax pulp | | |
|------------------------------------|-----------|----------|---------|------------------------------------|-----------|----------|---------|
| | flax | kappa 28 | kappa 6 | | flax | kappa 28 | kappa 6 |
| wax C ₄₀ | 0.70 | 0.55 | 0.16 | wax C ₄₇ | 0.91 | 0.00 | 0.00 |
| C ₁₆ :C ₂₄ | 0.26 | 0.26 | 0.12 | C ₁₆ :C ₃₁ | 0.12 | 0.00 | 0.00 |
| C ₁₈ :C ₂₂ | 0.07 | 0.04 | 0.04 | C ₁₈ :C ₂₉ | 0.48 | 0.00 | 0.00 |
| C ₂₀ :C ₂₀ | 0.24 | 0.18 | 0.00 | C ₂₀ :C ₂₇ | 0.16 | 0.00 | 0.00 |
| C ₂₂ :C ₁₈ | 0.13 | 0.07 | 0.00 | C ₂₂ :C ₂₅ | 0.14 | 0.00 | 0.00 |
| wax C ₄₂ | 4.86 | 8.51 | 0.80 | wax C ₄₈ | 30.0 | 23.9 | 1.04 |
| C ₁₆ :C ₂₆ | 3.37 | 7.18 | 0.72 | C ₁₆ :C ₃₂ | 0.63 | 1.24 | 0.00 |
| C ₁₈ :C ₂₄ | 0.34 | 0.69 | 0.08 | C ₁₈ :C ₃₀ | 16.6 | 15.0 | 0.48 |
| C ₂₀ :C ₂₂ | 0.42 | 0.17 | 0.00 | C ₂₀ :C ₂₈ | 7.13 | 5.03 | 0.28 |
| C ₂₂ :C ₂₀ | 0.59 | 0.44 | 0.00 | C ₂₂ :C ₂₆ | 4.59 | 2.40 | 0.28 |
| C ₂₄ :C ₁₈ | 0.13 | 0.03 | 0.00 | C ₂₄ :C ₂₄ | 0.58 | 0.15 | 0.00 |
| C ₂₆ :C ₁₆ | 0.02 | 0.01 | 0.00 | C ₂₆ :C ₂₂ | 0.16 | 0.04 | 0.00 |
| | | | | C ₂₈ :C ₂₀ | 0.17 | 0.04 | 0.00 |
| wax C ₄₄ | 39.3 | 67.6 | 4.37 | C ₃₀ :C ₁₈ | 0.08 | 0.01 | 0.00 |
| C ₁₆ :C ₂₈ | 30.1 | 54.1 | 3.23 | | | | |
| C ₁₈ :C ₂₆ | 6.82 | 12.4 | 1.04 | wax C ₅₀ | 8.16 | 1.85 | 0.39 |
| C ₂₀ :C ₂₄ | 0.67 | 0.44 | 0.04 | C ₁₆ :C ₃₂ | 0.41 | 0.29 | 0.00 |
| C ₂₂ :C ₂₂ | 1.14 | 0.40 | 0.04 | C ₂₀ :C ₃₀ | 1.85 | 0.44 | 0.02 |
| C ₂₄ :C ₂₀ | 0.35 | 0.07 | 0.00 | C ₂₂ :C ₂₈ | 4.12 | 0.95 | 0.37 |
| C ₂₆ :C ₁₈ | 0.03 | 0.06 | 0.00 | C ₂₄ :C ₂₆ | 1.54 | 0.11 | 0.00 |
| C ₂₈ :C ₁₆ | 0.06 | 0.04 | 0.00 | C ₂₆ :C ₂₄ | 0.07 | 0.07 | 0.00 |
| C ₃₀ :C ₁₄ | 0.07 | 0.07 | 0.00 | C ₂₈ :C ₂₂ | 0.11 | 0.00 | 0.00 |
| | | | | C ₃₀ :C ₂₀ | 0.05 | 0.00 | 0.00 |
| wax C ₄₅ | 0.82 | 0.55 | 0.00 | | | | |
| C ₁₆ :C ₂₉ | 0.32 | 0.22 | 0.00 | wax C ₅₂ | 3.71 | 0.73 | 0.00 |
| C ₁₈ :C ₂₇ | 0.33 | 0.33 | 0.00 | C ₂₀ :C ₃₂ | 0.20 | 0.00 | 0.00 |
| C ₂₀ :C ₂₅ | 0.05 | 0.00 | 0.00 | C ₂₂ :C ₃₀ | 1.02 | 0.26 | 0.00 |
| C ₂₂ :C ₂₃ | 0.10 | 0.00 | 0.00 | C ₂₄ :C ₂₈ | 2.05 | 0.47 | 0.00 |
| C ₂₄ :C ₂₁ | 0.03 | 0.00 | 0.00 | C ₂₆ :C ₂₆ | 0.34 | 0.00 | 0.00 |
| | | | | C ₂₈ :C ₂₄ | 0.04 | 0.00 | 0.00 |
| wax C ₄₆ | 78.1 | 109 | 4.63 | C ₃₀ :C ₂₂ | 0.05 | 0.00 | 0.00 |
| C ₁₆ :C ₃₀ | 15.8 | 18.0 | 0.88 | | | | |
| C ₁₈ :C ₂₈ | 55.1 | 85.4 | 3.39 | wax C ₅₄ | 1.28 | 0.00 | 0.00 |
| C ₂₀ :C ₂₆ | 4.69 | 4.34 | 0.24 | C ₂₂ :C ₃₂ | 0.16 | 0.00 | 0.00 |
| C ₂₂ :C ₂₄ | 1.17 | 0.80 | 0.12 | C ₂₄ :C ₃₀ | 1.11 | 0.00 | 0.00 |
| C ₂₄ :C ₂₂ | 0.96 | 0.18 | 0.00 | | | | |
| C ₂₆ :C ₂₀ | 0.08 | 0.07 | 0.00 | | | | |
| C ₂₈ :C ₁₈ | 0.15 | 0.07 | 0.00 | | | | |
| C ₃₀ :C ₁₆ | 0.16 | 0.22 | 0.00 | | | | |

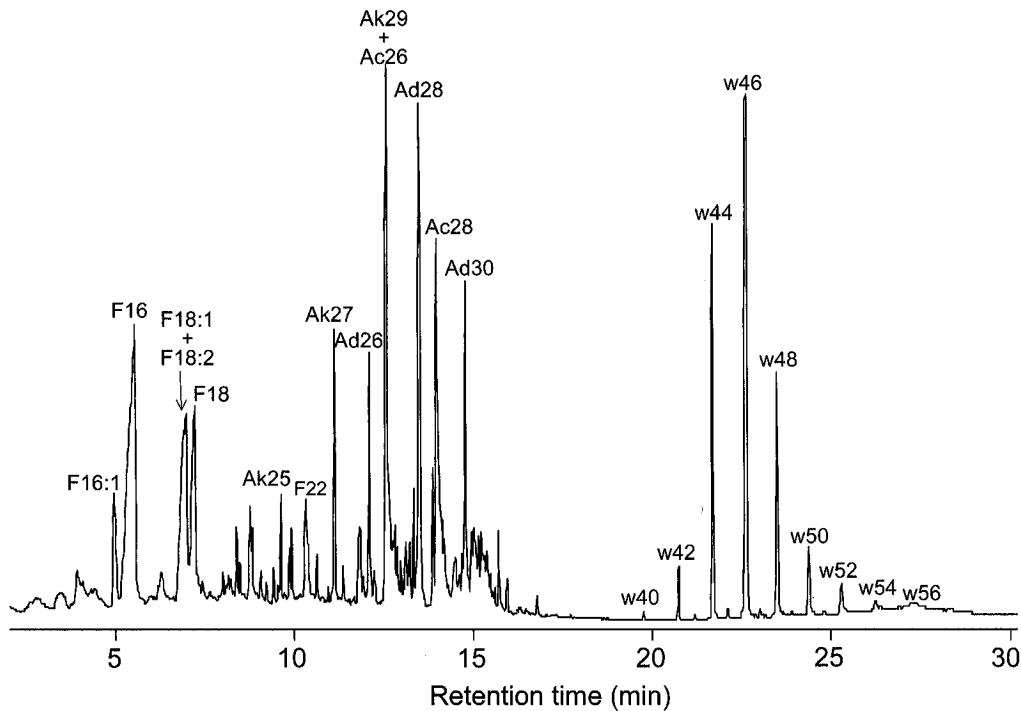


Figure 1. GC-MS chromatogram of the underivatized lipid extracts from flax (*Linum usitatissimum*) fibers. F(*n*), *n*-fatty acid series; Ak(*n*), *n*-alkane series; Ad(*n*), *n*-aldehyde series; Ac(*n*), *n*-alcohol series; w(*n*): wax series; *n* denotes the total carbon atom number. (The wax lengths have now been corrected.)

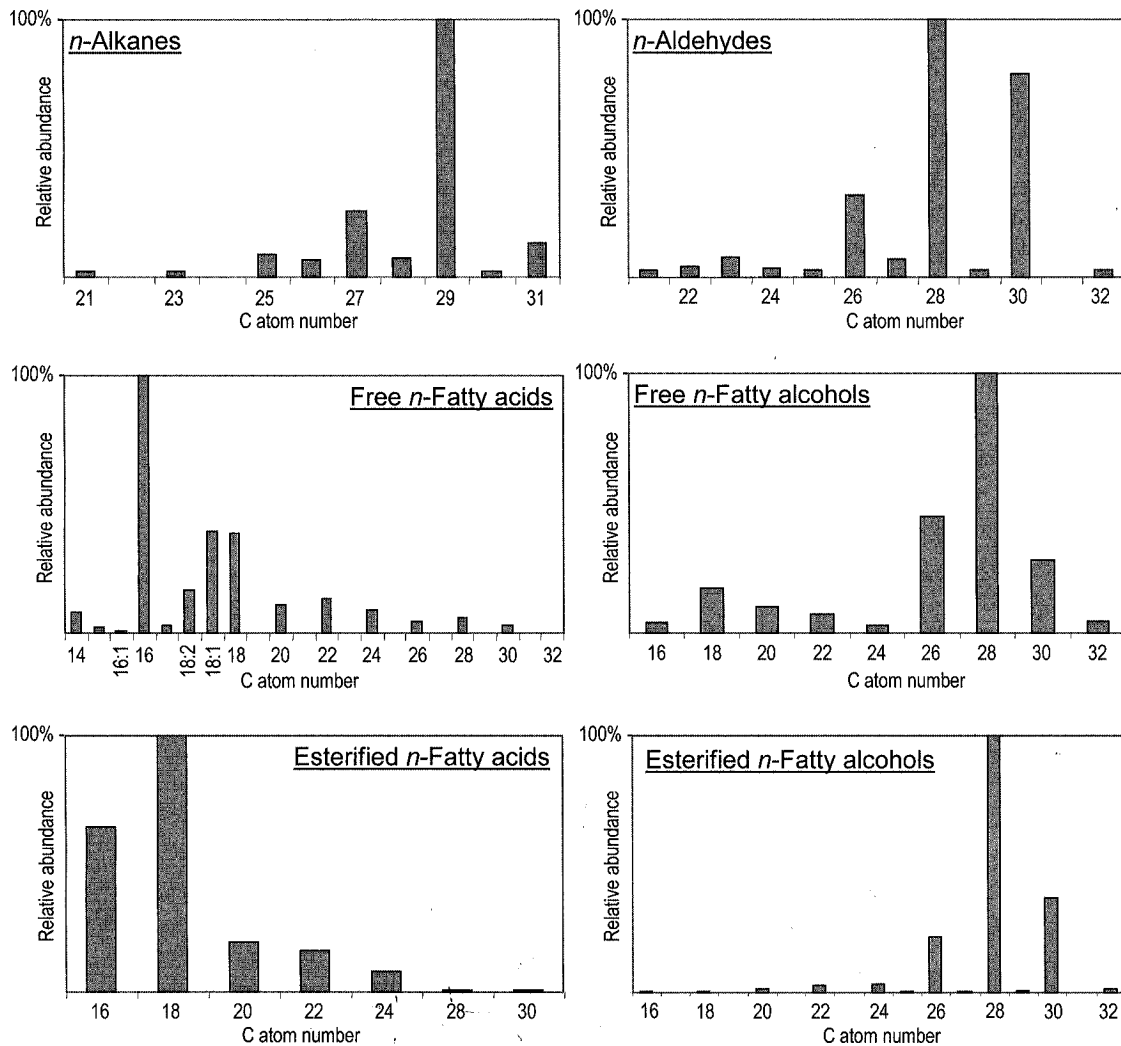


Figure 2. Distribution of the main aliphatic series identified in the extracts of flax (*L. usitatissimum*) fibers. The histograms are scaled up to the abundance of the major peak in the series. (The lengths of the esterified fatty alcohol series have now been corrected.)

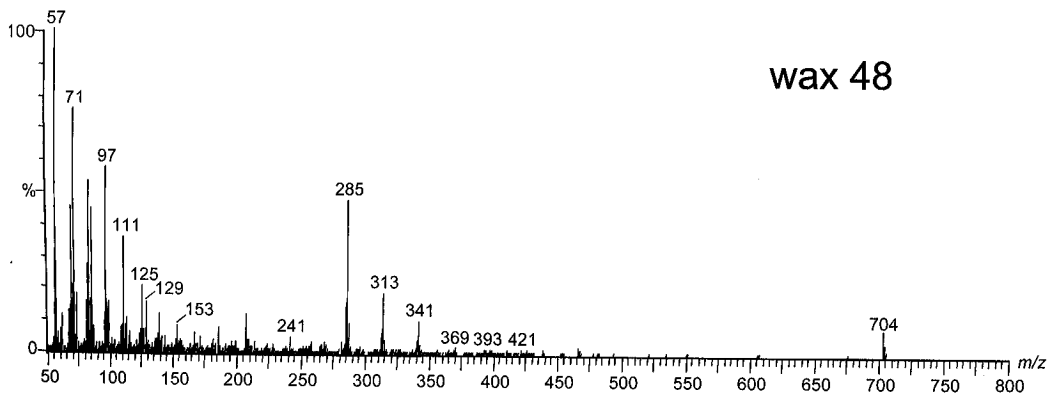
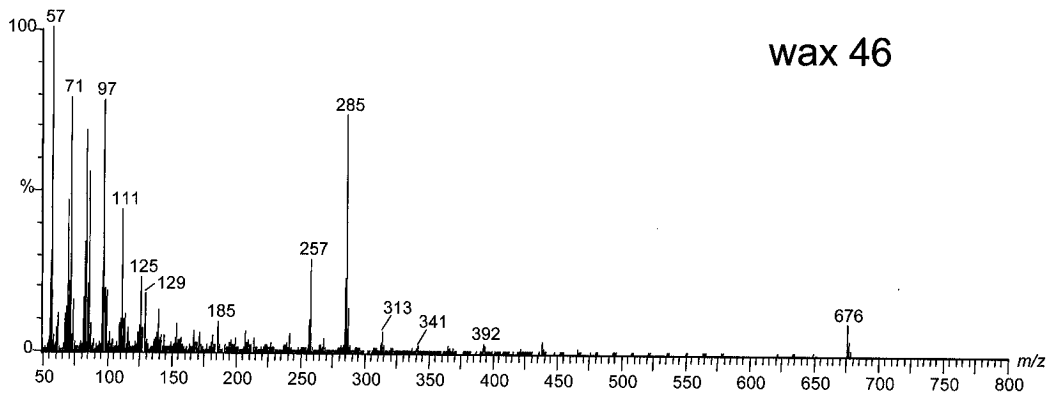
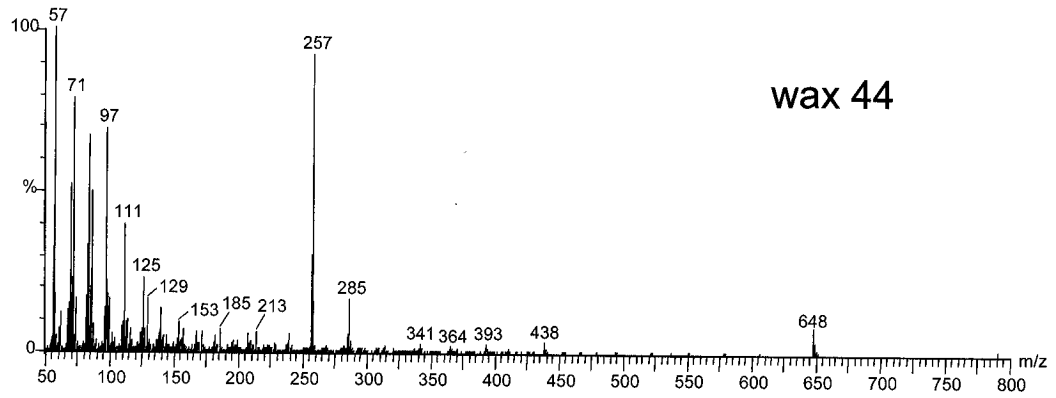


Figure 3. Mass spectra of the chromatographic peaks corresponding to (a) wax C₄₄, (b) wax C₄₆, and (c) wax C₄₈. (The lengths of the waxes have now been correctly identified.)

alkane series;
then corrected.)

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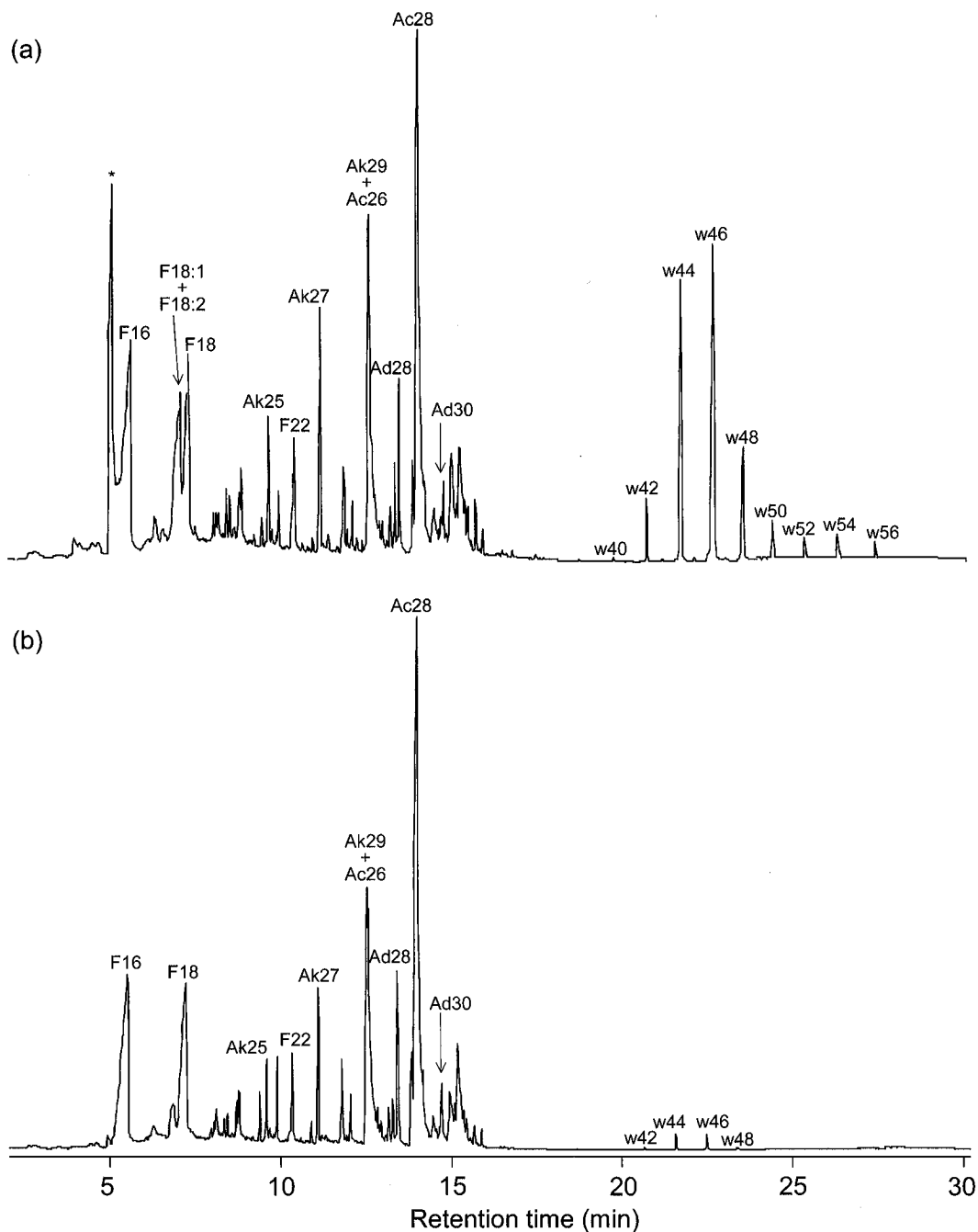


Figure 4. GC-MS chromatograms of the underivatized lipid extracts from (a) flax pulp with kappa number 28 and (b) flax pulp with kappa number 6. F(*n*), *n*-fatty acid series; Ak(*n*), *n*-alkane series; Ad(*n*), *n*-aldehyde series; Ac(*n*), *n*-alcohol series; w(*n*), wax series; *n* denotes the total carbon atom number. * is anthraquinone. (The wax lengths have now been corrected.)

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