

Commentary to: “Improving the thiobarbituric acid-reactive-substances assay for estimating lipid peroxidation in plant tissues containing anthocyanin and other interfering compounds” by Hodges et al., *Planta* (1999) 207:604–611

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Received: 17 March 2017 / Accepted: 13 April 2017 / Published online: 29 April 2017
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The thiobarbituric acid-reactive-substances (TBARS) assay developed by Hodges et al. (1999) is nowadays the most popular method for the determination of malondialdehyde (MDA) by-products in plant tissue. In the original method, the following equations are proposed:

$$\left[(\text{Abs } 532_{+\text{TBA}}) - (\text{Abs } 600_{+\text{TBA}}) - (\text{Abs } 532_{-\text{TBA}} - \text{Abs } 600_{-\text{TBA}}) \right] = A \quad (1.1)$$

$$\left[(\text{Abs } 440_{+\text{TBA}} - \text{Abs } 600_{+\text{TBA}}) 0.0571 \right] = B \quad (1.2)$$

$$\text{MDA equivalents (nmol ml}^{-1}\text{)} = (A - B / 157000) \times 10^6 \quad (1.3)$$

where 532 nm is the maximum absorbance of the TBA-MDA complexes, 600 nm is the correction factor for nonspecific turbidity, 440 nm is the correction factor for interference generated by sucrose, and 157000 is the molar extinction coefficient for MDA.

Although the method has deservedly received more than 1200 citations (Scopus 2017), Eq. (1.3) does contain a mistake in its present form and should be corrected to:

$$(A - B) / 157000 \times 10^6 \quad (1.4)$$

The molar extinction coefficient for MDA has to be applied to $(A - B)$ and not only to the values of B , as per the original Eq. (1.3). This mistake, which can be detected by a trained eye, can generate an incorrect calculation of the TBARS level by less expert users. The aim of this commentary is, therefore, to remedy the spread of the wrong equation for TBARS calculation proposed by Hodges et al. (1999).

References

- Hodges DM, DeLong JM, Forney CF, Prange RK (1999) Improving the thiobarbituric acid reactive substances assay for estimating lipid peroxidation in plant tissues containing anthocyanin and other interfering compounds. *Planta* 207:604–611
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