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## Data Article

# Dataset on exogenous application of salicylic acid and methyljasmonate and the accumulation of caffeine in young leaf tissues and catabolically inactive endosperms



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## ABSTRACT

Exogenous exposure of coffee plants to 50  $\mu\text{M}$  and 500  $\mu\text{M}$  salicylic acid through liquid hydroponic medium or the exposure to volatile fumes of methyljasmonate was carried out to study the role of salicylic acid and methyljasmonate on the accumulation of caffeine and other methylxanthines like 7-methylxanthine, theobromine and theophylline. Transcript levels of the first, second and third *N*-methyltransferase involved in the core caffeine biosynthetic pathway namely, xanthosine methyltransferase (XMT), methylxanthine methyltransferase (MXMT) and di-methylxanthine methyltransferase (DXMT) was investigated by semi-quantitative RT-PCR for validating the reason behind the changes of caffeine biosynthetic potential under the influence of the two analogues of plant phytohormones. Maturing coffee fruits are known to be biologically inactive with respect to caffeine biosynthetic activity in the endosperms. To understand this, fruits were treated with different doses of salicylic acid in a time-course manner and the de-repression of tissue maturation-mediated knockdown of caffeine biosynthesis by exogenously applied salicylic acid was achieved. In our companion paper [1] it was shown that the repression of NMT genes during the dry weight accumulation phase of maturing endosperm could be relaxed by the exogenous application of salicylic acid and methyljasmonate. A probable model based on the work carried out therein and based on other literature [2–4] was proposed to describe that the crosstalk

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E-mail address: [girimpl@gmail.com](mailto:girimpl@gmail.com) (P. Giridhar).<http://dx.doi.org/10.1016/j.dib.2017.05.004>2352-3409/© 2017 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

between salicylic acid or methyljasmonate and the ABA/ethylene pathway and might involve transcription factors downstream to the signaling cascade.

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## Specifications Table

Subject area	Biology.
More specific subject area	Plant Physiology.
Type of data	Graph, Image
How data was acquired	RP-HPLC (LC-10 equipped with SPD10 detector and CR7a recorder, Shimadzu), PCR (Palm Cycler, Corbett Inc.).
Data format	Raw data statistically analyzed.
Experimental factors	Salicylic acid treatment of coffee berries. Salicylic acid and methyljasmonate treatment of coffee seedlings.
Experimental features	One year old coffee seedlings were acclimatized to liquid Hoagland's hydroponic medium and the medium was supplemented with 50 and 500 $\mu\text{M}$ salicylic acid or the plants were exposed to 1 $\mu\text{l}$ and 10 $\mu\text{l}$ volatile fumes of methyljasmonate for treatments of 6 h and 12 h. The methylxanthines isolated from young leaves of treated plants was compared to that of untreated plants. After 12 h treatment plants were washed with water and placed back in Hoagland's medium for 48 h to serve as control retained sample. The biochemical data was complemented with NMT transcript profiling. Fruits of coffee at the beginning of endosperm dry weight accumulation stage (named as CC5), which is known to have repressed NMT gene expression was harvested and treated with 5, 50, 250 and 500 $\mu\text{M}$ salicylic acid for 6 h, 12 h and 24 h. The methylxanthine contents in the endosperm of the treated fruits was compared to that of untreated fruits and fruits rescued in water control for 48 h after the 24 h salicylic acid treatment.
Data source location	Mysore, Karnataka, India 12.2958°N, 76.6394°E.
Data accessibility	Data is available in this article. Implication of the study accepted in Plant Gene [1].

## Value of the data

- The data represents methylxanthine metabolite profile and gene expression studies during salicylic acid and methyljasmonate treatment of plants and catabolically active endosperms.
- The data studies the dosage and dosage time on the changes in the metabolite profile of endosperms.
- The data is useful for further studies on the molecular and biochemical regulation of the caffeine metabolism in coffee.

## 1. Data

The data set used in the study involves the experimental results indicating the inducible effects of exogenous exposure of salicylic acid and methyljasmonate on the three NMT transcripts. The data also

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