

# FRUIT INFESTATION OF *DROSOPHILA SUZUKII* DETECTED BY FAST IMMUNOLOGICAL DETECTION

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Sampling time	30'	30'	30'
Target proteins	eIF5A	VDAC1	SOD
negative control	--	--	--
Rearing medium	--	--	--
Larvae	++	++	++
Pupae	++	++	++
Adult	++	++	++

Sampling time	20'	20'	20'	20'
Target proteins	eIF5A	VDAC1	SOD	Calreticulin
Blackberry	--	+	+	+
Blackberry + larvae	--	+	+	++
Blueberry	--	+	+	+
Blueberry + Larvae	--	+	+	++
Raspberry	--	+	+	+
Raspberry + larvae	--	+	+	++
negative control	--	--	--	--
positive control (Larvae <i>D. suzukii</i> )	--	--	--	++

Tab 1: Results of two ELISA experiments sampled at 30 (upper) and 20 minutes (lower half)

**Aim:** detection of spotted wing drosophila larvae in fruits by means of antibody tests.

### Results:

- ELISA detected embryo, larvae, pupae, and adults of *D. suzukii* (Tab 1)
- ELISA was negative for rearing medium but sometimes positive for berry extracts
- Dot blot (Fig 1) was positive for “berry + larvae” and “berry + adult” extracts and negative for “berry extracts”.

### Conclusion:

Calreticulin was the most sufficient target protein detecting larvae in fruit extracts using ELISA and dot blot. However, fruit extracts may lead to false positive results. This may be solved with modified extraction buffers. Future work will focus on the improvement of the extraction buffer, the identification of additional target proteins, specificity to spotted wing drosophila, and transfer to lateral flow device.

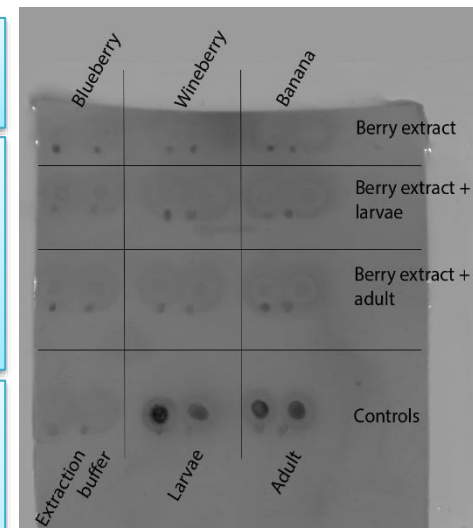


Fig 1: Dot blot of berry and insect extracts with calreticulin

### Methods:

- target proteins were selected from *D. melanogaster* proteome<sup>a</sup>
- Four antibodies (Tab 1) were tested in 1/1000 dilutions with extracts of fruits, adults, larvae, and eggs of *D. suzukii* using ELISA and dot blot
- For ELISAs we used BIOREBA's PTA protocol
- Dot blot was done according to abcam's protocol.
- We used approximately 1.2g berry tissue in 20ml extraction buffer. Egg, larvae or adults were extracted in 0.8ml and added to the berry extracts.
- *D. suzukii* adults, pupae, larvae, and eggs were reared in laboratory at ZHAW.