

Jerzy WILDE

Poisoning with Mercury of Honeybee Queens During Their Development

Zatrucie rtęcią matek pszczelich podczas ich rozwoju

INTRODUCTION

In 1986 a poisoning with mercury of honeybee queens in cells occurred in Poland. It was so serious that no normal queens emerged. During incubation of queen cells in an incubator mercury flowed out of a broken thermometer. It was circa 6 g of mercury at 45dm³ of the incubator capacity at 34.5 °C and 80% relative humidity of the air. In bibliography a few descriptions of queen diseases (2, 4) were found but nothing about honeybee queens poisoning.

MATERIAL

When mercury flowed out of a broken thermometer in an incubator there were 21 queen cells (*Apis mellifera carnica* Pollm.) in 9th day of queens development and 9 queen cells in 12th day of development (Table 1). After two days 11 more queen cells were put into an incubator (9th day of development). After 8 days the incubator was cleaned.

RESULTS

The longest time of contact with steams of mercury had 21 queen cells - 8 days. There were all of the development stage of honeybee queen (Table 1). In this case it caused most serious poisoning, despite it 18 queens emerged from 21 queen cells. The poisoning manifested itself with wings damage, which is the following: 6 queens had wings of I pair not altogether developed and 12 queens had twisted thread-like wings of I pair or their stubs and no wings of II pair (Table 2 - number 5 and 6). These wings look like dwarfish wings described by Fig 1. or a "rudimental wing" described by H a c h i n o h e (3).

The shortest time of contact with steams of mercury had 9 queen cells – 5 days – and only in the stage of pupa (Table 1). In this group all queens emerged. They had wings of II pair white (3 queens) or wings of II pair not altogether transparent (6 queens).

Not much longer the time of contact with mercury had 11 queen cells – only 1 day – but in all the development stages (Table 1). In this group 9 queens emerged. 4 of them had wings of II pair black, and 5 queens had wings of I pair not transparent (Table 2 – 3 and 4 points).

The poisoning did not lower the weight of all emerged queens. They had big, swollen abdomens.

Tab. 1. The development stage of honeybee queens and time of contact with steams of mercury
Stadia rozwojowe matek pszczelich oraz czas kontaktu z parami rtęci

	Number of group queen cells	The development stage in which acted steams of mercury	Days of contact	Number of emerged queens
I	21	larva prepupa pupa	8	18
II	9	pupa	5	9
III	11	larva prepupa pupa (only 3 days)	6	9

Tab. 2. Kinds of wings damage of honeybee queens poisoned with mercury
Rodzaje uszkodzeń skrzydeł u matek pszczelich zatrutych rtęcią

Kinds of wings damage	Group and number of queens
1. Wings of II pair not altogether transparent	III – 6
2. Wings of II pair white	III – 3
3. Wings of II pair black	II – 4
4. Wings of I pair not transparent	II – 5
5. Wings of I pair not be altogether developed	I – 6
6. Twisted thread – like wings of I pair or their stubms and wings of II pair are absent	I – 12

CONCLUSION

The worst damage of wings of I and II pairs was found in queens which were being poisoned from the moment of sealing of queen cells. While incubing queens in an incubator one should be careful with mercury - in - glass thermometer.

REFERENCES

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STRESZCZENIE

Podczas inkubacji mateczników w cieplarni wylała się rtęć z uszkodzonego termometru. Pomimo poważnego zatrucia wygryzło się 36 matek z 41 mateczników. Zatrucie objawiło się różnymi rodzajami uszkodzeń skrzydeł.