

POISONOUS NIGHTCAP FROM POPPY SEEDS

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Objective

Poppy seeds obtained from mature *Papaver somniferum* normally contain only very small amounts of opium alkaloids. The alkaloid concentration of seeds is usually not under control by Food administration.

We report a poisoning developing disastrous consequences under a peculiar set coincidences.



Case report

Patient: 6-week-old female baby (5 kg body weight)

Routes of exposure:

Oral ingestion of 75 mL of a milk nightcap prepared by the mother. 200 grams poppy seeds were cooked with 500 mL milk and honey.

In a book about baking recipes this was recommended as an old household remedy for baby's sedation.

Dose: At most **6 mg morphine/kg body weight**.

Estimation see below.

Time of admission: 3 hours after ingestion.

Clinical features:

➤ Symptoms:

CNS depression with intermittent respiratory arrest, miosis, tachycardia, and pale grey marbled skin

➤ Arterial oxygen saturation: initially 89 %, later 69 %

➤ Toxicological analysis (GC/MS):

	Morphine	Codeine
Urine day 1	18 µg/L	317 µg/L
Urine day 2	627 µg/L	< 5 µg/L
Serum day 1	not measured	not measured
Serum day 2	4,3 µg/L	not measured

Treatment:

Intubation and ventilation; administration of naloxone was successful to restore spontaneous breathing but repeated intravenous doses were needed for 10 hours (total dose 1 mg, 0.2 mg/kg, resp.).

Outcome:

The patient awoke 15 hours after ingestion without hypoxic sequelae.

Dose estimation

- Usual single dose for neonates p.o. 0.125 to 0.225 mg/kg
Maximum daily morphine dose p.o. 0.5 mg/kg
- The mother used poppy seeds from supermarket containing 0,1 % morphine, i.e. 200 mg morphine in 200 g seeds boiled in 500 mL milk.
- Baby ingested 75 mL of the nightcap containing up to 30 mg morphine and **6 mg morphine per kg body weight, resp.**
- The patient received about 10-fold overdose concerning maximum oral daily dose.

Causes of baby's life-threatening poisoning

- **Overdose** about 10-fold
- **Prolonged half-time and higher toxicity** of alkaloids as a result of the 6 weeks old baby's immature blood-brain barrier, immature biotransformation, and immature renal excretion.

Content of opium alkaloids "in" p. seeds [µg/g]

Results from	Morphine	Codeine	Source
- International literature	0,5.. 620	0,1... 57	[1,2]
- Germany 2005 (n = 68)	0,7.. 320	n.m....14	[1]
- Our patient (PIC Erfurt)	1000	3	

Origin of opium alkaloids at poppy seeds

At present, most farmers grow poppy cultivars with closed capsular fruits harvested by machines. Such capsular fruits must be opened to obtain the seeds. The machine-harvesters mash immature green capsules containing opium contaminating the seed's surfaces with alkaloids.

Conclusion

- The patient was poisoned by opium alkaloids extracted from poppy seeds during preparation of the nightcap.
- The PIC, the Federal Institute of Risk Assessment, and the Food Administration advised the public against this household remedy immediately.
- Food Administration took measures to control the alkaloid content of poppy seeds to protect consumers health from opiate poisoning.

Literature

- [1] Bundesinstitut für Risikobewertung: BfR empfiehlt vorläufige maximale tägliche Aufnahmemenge und einen Richtwert für Morphin in Mohnsamen. Gesundheitliche Bewertung Nr. 012/2006 (07.12.2005). [http://www.bfr.bund.de/cm/208/...](http://www.bfr.bund.de/cm/208/)
- [2] Westphal F; Rochholz G; Gheorghiu D; Leinenkugel A; Schütz HW: Morphin und Codein im Blut nach Genuß von Mohnsamen. Blutalkohol 48 (2006) 14-27.