

LETTER TO THE EDITOR

Beware of accidental ingestion of *Colchicum autumnale* mistaken for *Allium victorialis*

Dear Editor,

According to the statistical data on food poisoning from the Ministry of Health, Labor, and Welfare, two cases of colchicine poisoning occurred in 2021, resulting in one death. Additionally, three more such cases occurred in 2022, resulting in two deaths, indicating that lethal cases of this type of poisoning still occur.^{1,2} We encountered a fatal case of colchicine poisoning because of the accidental ingestion of *Colchicum autumnale*, and we describe it here.

An 86-year-old man with a history of diabetes mellitus, chronic heart failure, atrial fibrillation, severe tricuspid regurgitation, postoperative gastric cancer status, and iron-deficiency anemia had accidentally ingested *Colchicum autumnale* (including the stem at the base and 2 to 3 leaves, but no bulbs), which had grown in his garden in the form of tempura. The patient developed diarrhea the day after ingestion. However, he refused hospitalization and was observed at home. Three days after the ingestion, the patient experienced difficulty moving and was taken by ambulance to a nearby hospital.

On admission, he had developed multiple organ failure, including circulatory shock, acute liver failure, acute kidney injury (AKI), and coagulation disorders. The patient was transferred to our hospital for critical care. He presented with a consciousness level corresponding to a score of 12 on the Glasgow Coma Scale (E4V2M6) and was administered noradrenaline. On physical examination, his blood pressure was 137/64 mm Hg, heart rate was 98 beats per minute, respiratory rate was 28 breaths per minute, and body temperature was 37.1°C. The results of his blood tests were as follows: white blood cell count of 9600/ μ L, hemoglobin of 13.7 g/dL, and platelet count of 11.8×10^4 / μ L. The results of the coagulation tests were prothrombin time-international normalized ratio (PT-INR), 3.56; D-dimer, 177.0 μ g/mL; fibrin degradation product (FDP), 433.0 μ g/mL; and an acute disseminated intravascular coagulation (DIC) score of 6 points. Biochemical tests revealed: aspartate aminotransferase (AST), 635 U/L; alanine aminotransferase (ALT), 250 U/L; lactate dehydrogenase (LD IFCC), 2294 U/L; alkaline phosphatase (ALP IFCC), 404 U/L; creatine kinase (CK), 1216 U/L; blood urea nitrogen (BUN), 50.8 mg/dL; creatinine (CRE), 3.30 mg/dL; C-reactive protein (CRP), 10.48 mg/dL; and blood

sugar, 66 mg/dL. The results of an arterial blood gas analysis, which was collected on use of an oxygen mask at 10 L/min, indicated a pH of 7.24, PaO₂ of 105 mm Hg, PaCO₂ of 58 mm Hg, HCO₃⁻ of 24.9 mmol/L, and a lactate level of 77 mg/dL. The family of the patient brought in samples of the *Colchicum autumnale* that had been mistakenly ingested (Figure 1). After confirming that it was not *Allium victorialis*, activated charcoal was administered to the patient via a nasogastric tube, after the placement of a cuffed endotracheal tube. Blood purification therapy was initiated for the management of acute liver failure and AKI. Despite intensive care unit treatment, which included artificial ventilation support and acute blood purification therapy, his condition rapidly deteriorated, and he died on the fourth day after the accidental ingestion.

Colchicine strongly inhibits cell division and intracellular metabolism and can damage cells and organs with fast metabolic turnover, such as small intestinal mucosal cells and bone marrow cells. The half-life of colchicine is 10 to 30 min and the time to reach peak blood concentration is 30 min to 2 h. However, the inhibitory effect on cell division reaches its peak ~10 h after ingestion, with a latency period of 2 to 12 h until toxic symptoms appear. Although no specific effective treatment exists, symptomatic therapy is necessary to overcome the acute phase of multi-organ failure, which lasts for ~1 week. A level of 0.3 to 2.5 ng/mL of colchicine in the blood is considered therapeutic, that of 5.0 ng/mL or higher is considered toxic, whereas that of 9.8 ng/mL or higher is considered lethal.³

In our case, the colchicine blood concentration remained elevated, with levels of 5.0 and 4.0 ng/mL on the third and fourth day after ingestion, respectively. The colchicine concentration in *Colchicum autumnale* samples obtained in this study was higher than those previously reported by the Akita Prefecture, with concentrations of 2028.7, 1873.7, and 2004.6 μ g/g in the leaves, stems, and roots, respectively. Notably, colchicine was not detected in *Allium victorialis* samples.⁴ The minimum lethal dose of colchicine is 4.3 mg in a person weighing 50 kg (86 μ g/kg). Additionally, a colchicine concentration of 2028.7 μ g/g in the leaves of the plant translates to a dose of 2.1 g, which is sufficient to reach the minimum lethal dose in humans. Therefore, the *Colchicum autumnale* has high toxicity, resulting in

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Colchicum autumnale



Allium victorialis

FIG. 1 *Colchicum autumnale* collected at the patient's home and commercially available *Allium victorialis*. Colchicine concentration in the leaves, stems, and roots of *Colchicum autumnale* is of 2028.7, 1873.7, and 2004.6 µg/g, respectively. Contrarily, colchicine was not detected in *Allium victorialis* samples.

multiple organ failures and mortality.⁵ Colchicine poisoning manifests with non-specific symptoms and can only be diagnosed with the aid of a detailed medical history and assessment of the severity of symptoms. Healthcare professionals should be aware of *Colchicum autumnale* toxicity and public education on the prevention of accidental ingestion is warranted.

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CONFLICT OF INTEREST STATEMENT

Authors declare no conflict of interests for this article.



ETHICS STATEMENT

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Animal Studies: Not applicable.

Tasuku Nara
Hajime Nakae 
Yasuhito Irie 
Koumei Kameyama
Manabu Okuyama

Department of Emergency and Critical Care Medicine,
Akita University Graduate School of Medicine, Akita,
Japan

Correspondence

Hajime Nakae, Department of Emergency and
Critical Care Medicine, Akita University Graduate
School of Medicine, 1-1-1 Hondo, Akita 010-8543,
Japan.

Email: nakaeh@doc.med.akita-u.ac.jp

ORCID

Hajime Nakae  <https://orcid.org/0000-0003-3733-3530>

Yasuhito Irie  <https://orcid.org/0000-0002-1628-9262>

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