

REVIEW ARTICLE

Human *Datura* and *Brugmansia* Poisoning: A Focused Narrative Review of Selected Reports With at Least 10 Cases or Exposures

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Abstract

Background: Differences in case definitions, denominators, attribution and accessible outcome data hinder comparison of larger *Datura* and *Brugmansia* reports. We aimed to map exposure settings, clinical themes, high-acuity features, outcomes and source-level limitations in selected larger human reports.

Methods: This focused, non-exhaustive narrative review included human reports with at least 10 cases/exposures published through 31 July 2026, without a lower date limit. PubMed-indexed, Scopus/CNKI bibliographic, publisher, public-health and multilingual records informed selection. Nonhuman reports and sources lacking verifiable primary data were excluded. One reviewer extracted data and a second checked them; revision checks were targeted rather than comprehensive.

Results: Forty-two reports comprised 13 outbreak/public-health, 11 poison-center and 18 hospital/clinical sources, spanning 1885-2026 and 19 countries/regions. Exact stated counts ranged from 10 to 688; one provisional count exceeded 190. Attribution was analytical/botanical in eight, official in one, mixed in one, clinical/epidemiological in 29 and contextual/uncertain in three. Acute outcomes were reported for the full clinical denominator in 14 reports, partial/ongoing in three, ambiguous in three and not evaluable from available material in 22. Recurrent findings included delirium, mydriasis and tachycardia; high-acuity events included seizures, coma, respiratory compromise, intensive care and death. Six reports attributed 21 deaths to *Datura*. Four historical fatal outcomes with uncertain direct attribution and two honey-associated heatstroke deaths remained separate.

Conclusion: Selected reports document diverse exposures and severe events. Compatible exposure histories and shared-food clusters warrant assessment. Standardized reporting and linked poisoning registries could improve comparability; source counts do not establish independent cohorts or pooled event rates.

Keywords: *Datura*; Plant Poisoning; Atropine; Scopolamine; Solanaceae

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INTRODUCTION

Datura and *Brugmansia* are toxic solanaceous plants that contain tropane alkaloids, principally hyoscyamine/atropine and scopolamine. Exposure can produce a central and peripheral antimuscarinic toxidrome with agitation or delirium, hallucinations, mydriasis, dry mucosa, tachycardia, urinary retention, hyperthermia, and, in severe poisoning, seizures, coma, respiratory compromise, or

death. Toxicological reviews describe exposures across multiple regions and from accidental, medicinal, recreational, suicidal, and food-associated routes [1-3].

Published reports demonstrate broad geographic relevance but do not provide a single population-based incidence estimate. Regional toxicology-service data summarized by Kerchner and Farkas included 167 *Datura/Brugmansia* poisonings in Hungary during 2005-2017; 145 were reported as fully recovered, 22 still required

hospital treatment at service follow-up, and no fatal intoxications were reported in that dataset [1]. Other reports describe medicinal exposures in Asia, adolescent misuse in North America, and food-associated events in Africa and elsewhere. These poison-center, hospital, and outbreak numerators arise from different catchment populations, referral pathways, and case definitions, so they cannot be converted into a defensible global incidence or mortality rate. Fatal and nonfatal events nonetheless show clear public-health relevance, particularly when one contaminated food product or preparation can expose many people [1-3].

Earlier reviews address toxicological mechanisms and management [1-3], anticholinergic Solanaceae intoxications across temperate Europe [4], 21st-century *Datura* stramonium poisoning [5], and food-associated tropane alkaloid incidents and analytical methods [6]. These scopes overlap but differ in their populations and purposes. The present review focuses on the interpretation of selected larger human *Datura/Brugmansia* reports, with attention to denominators, attribution, acute outcomes, later follow-up and possible cross-report overlap.

The objective was to map exposure settings, clinical themes, high-acuity features, outcomes and source-level limitations in selected larger human reports of *Datura*- and *Brugmansia*-related poisoning. For this descriptive synthesis, high-acuity features were operationally defined as seizures, coma, respiratory compromise or ventilation, intensive care admission, or death. Source-level limitations included case definition, confirmation method, denominator, missing outcomes, follow-up and possible overlap.

METHODS

Study design and scope

We conducted a focused, purposive, non-exhaustive narrative review using descriptive source mapping. The review was designed to characterize and compare source-level features of larger human *Datura* and *Brugmansia* poisoning reports rather than to generate pooled estimates of incidence, treatment effects, recovery, or mortality. It was not preregistered and was not conducted as a systematic review or meta-analysis. The unit of synthesis was the individual source record rather than an assumed independent patient cohort. Accordingly, heterogeneous data on clinical manifestations, treatment, intensive-care admission, recovery, and mortality were summarized descriptively and were not pooled across reports. Descriptive source counts and percentages were calculated using the formulas provided in the supplementary workbook; no inferential statistical tests were performed.

Eligibility criteria

Reports were eligible if they had a verifiable bibliographic identity, described human exposure attributed by the source to *Datura* or *Brugmansia*—or a separately classified contextual tropane-alkaloid incident—reported at least 10 cases or exposures, and provided at least one

extractable exposure, clinical, or epidemiological characteristic beyond the denominator itself. Eligible source types included original articles, original abstracts, official investigations, and extractable plant-specific subgroups within broader reports.

The threshold of 10 cases or exposures was selected pragmatically to focus the review on larger reports and was not intended as a validated measure of severity, methodological quality, or statistical importance. Availability of full text or complete outcome reporting was not required when the minimum eligibility information could be verified from an original source record, such as an original abstract or official report; unavailable variables were retained as missing and were not imputed. Secondary citations alone were not considered sufficient when the underlying primary data required for eligibility could not be verified.

Records not included in the synthesis were documented separately with their reasons for non-inclusion. Single-case reports, series with fewer than 10 cases or exposures, non-human or botanical-only studies, reviews without extractable original data, unverifiable records, and reports not established within the specified publication boundary were excluded. Contextual incidents in which the implicated tropane alkaloid exposure was described but *Datura/Brugmansia* genus attribution remained uncertain were classified separately from source-attributed *Datura/Brugmansia* reports.

Information sources and search strategy

No lower publication-date limit was imposed. Reports published through 31 July 2026 were eligible, while clinical-guidance sources were considered through 1 August 2026. Source identification drew on PubMed-indexed records, publisher and public-health sources, Scopus/CNKI bibliographic verification, poison-center publications, digitized historical sources, backward citations, and targeted multilingual assessment. Materials in English, Chinese, German, French, Polish, Persian, and Spanish were considered. Source identification was informed by plant names, antimuscarinic-toxicology terminology, poisoning, outbreak, case-series, and food-contamination concepts. Expanded local-name concepts, including dhatura, toloache, floripondio, chamico, and Persian and Chinese equivalents, are provided in the supplement.

The available documentation does not establish a complete historical search-and-screening log, including exact database-specific search strings, execution dates, and native result counts; an initial screening denominator is therefore not reported. Supplementary *Historical_Search_Provenance* documents the available source-identification records and their provenance, while *Search_Concepts* summarizes terminology relevant to source identification without presenting it as an executed database-specific search strategy. Wanfang and SID were not included among the documented completed source-identification routes. During revision on 5 October 2026,

targeted verification of identified primary reports and candidate sources was undertaken to resolve specific source-level questions; this did not constitute a comprehensive database update or exhaustive citation screening. Figure 1 therefore depicts reconciliation of the selected source register rather than a PRISMA flow diagram or a reconstruction of the original screening process.

Extracted variables included bibliographic identity, study setting, source and clinical denominators, exposure characteristics, clinical and high-acuity observations, outcomes, attribution, source-access limitations, and potential overlap between reports. Missing information was retained as missing and was not imputed. When machine-extracted or digitized text was unclear or unreliable, original

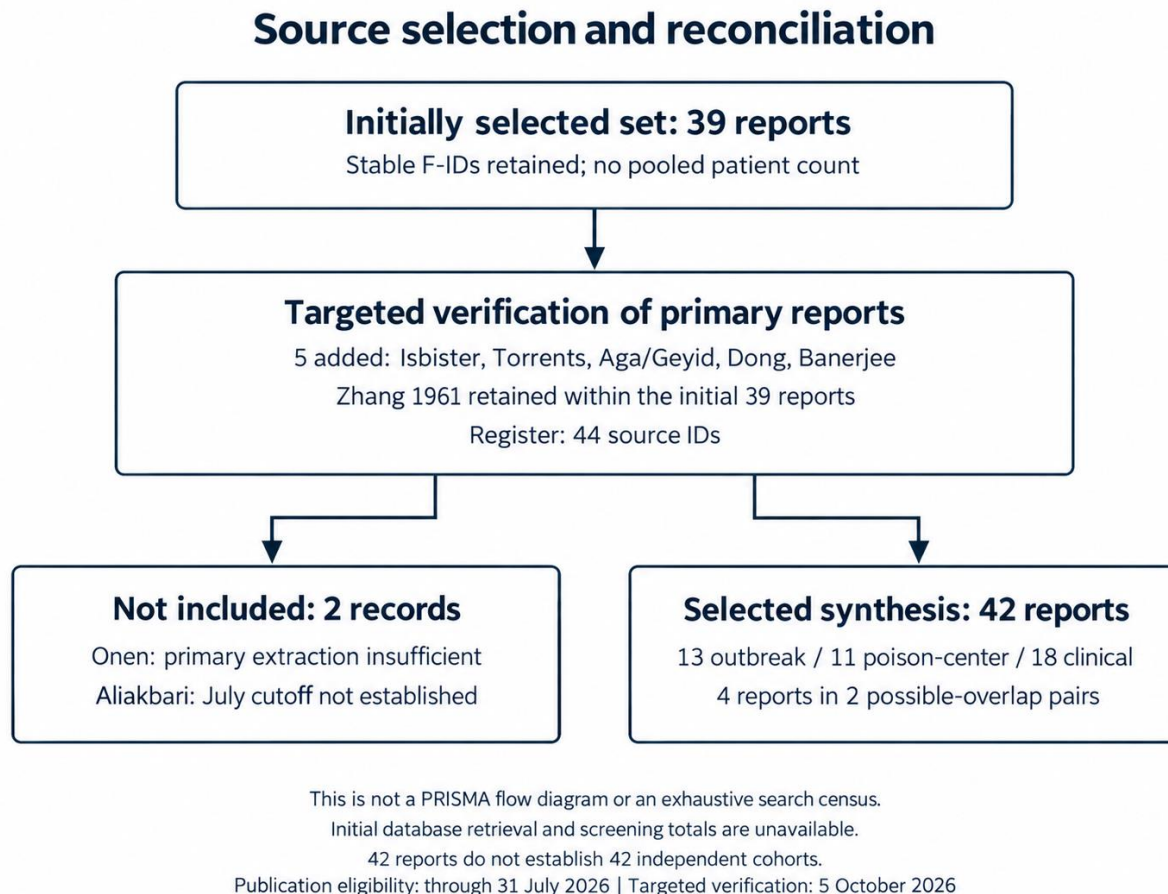


Figure 1. Source selection and reconciliation during revision. The initially selected set contained 39 reports. Five specifically identified reports were added and two reports did not meet the eligibility requirements for the revised synthesis, leaving 42 selected reports within a register of 44 identifiers. Four selected reports form two possible-overlap pairs. The diagram describes changes to the selected set, not initial database retrieval

Selection, extraction, and synthesis

Data were initially extracted by one reviewer and subsequently checked by a second reviewer against the available source material. Any discrepancies identified during this process were resolved through discussion and consensus; independent duplicate extraction was not performed. AI-assisted source checking and coding undertaken during revision are disclosed in the declaration at the end of the manuscript.

page images were examined where available. Page, table, or other source locators were recorded when they could be established.

Data definitions and coding

Each source record was assigned a single primary setting. Attribution was characterized across separate descriptive axes: attribution to the *Datura/Brugmansia* genus, chemical or botanical support for the implicated food or plant material, and analytical support from human specimens. For

summary purposes, reports were classified as having analytical/botanical source support, official attribution, mixed within-report confirmation, clinical/epidemiological attribution, or contextual/uncertain genus attribution. These categories describe the basis of attribution and do not imply uniform confirmation at the individual-patient level. Partial human-specimen toxicology findings were recorded separately and did not, on their own, establish botanical genus attribution for every case in a source record or require changing the report-level primary attribution category. In particular, a positive assay of implicated food or plant material does not by itself establish the botanical genus or demonstrate analytical confirmation in every exposed person.

For acute clinical outcome coding, the denominator was the identified affected or symptomatic clinical group when this could be separated from the broader exposure population; otherwise, the report-defined patient group was used. Total exposure, consumer, attendee, or poison-center call counts were retained separately when they differed from the clinical denominator.

Acute clinical status was coded into four mutually exclusive categories: (1) completed acute status explicitly accounting for the relevant clinical denominator; (2) explicitly partial or ongoing outcomes; (3) ambiguous terminal outcome wording or scope; and (4) acute status not evaluable from the available material. A completed acute status could include recovery, discharge, or death, provided that the final status of the full clinical denominator was accounted for. A reported death count alone was not considered sufficient to establish the outcomes of surviving patients. Likewise, inability to evaluate an endpoint because of source-access limitations was not interpreted as evidence that the original report failed to report that endpoint. Numerical mortality and explicitly reported later follow-up were coded separately from acute clinical status. These operational categories were used for descriptive synthesis and were not treated as validated measures of study quality or risk of bias.

Duplicate and overlap handling

Potential overlap between reports was assessed using geographic location, reporting center, calendar period, exposure context, authorship, denominator, and available clinical details. Reports with possible overlap were retained as source records but excluded from the descriptive subtotal of positive source-attributed death counts. Patient and exposure denominators were not summed across reports.

Explicit death counts attributed by the source to *Datura* were distinguished from fatal outcomes in *Datura*-labeled series with uncertain direct attribution and from associated or contextual deaths. When a source described a competing cause of death, that account was preserved rather than adjudicated by the reviewers. The resulting death subtotals describe source reporting and are not pooled mortality rates, risks, or causal-effect estimates.

Patient-level or event-level linkage was insufficient to establish a verified number of independent cohorts. Because a single report could describe several incidents, source records, incidents, and independent patient cohorts were treated as distinct counting units.

Quality and source appraisal

No formal risk-of-bias assessment, including JBI critical appraisal, was performed. The retained evidence included public-health investigations, poison-center series, hospital-based reports, conference abstracts, and historical publications. Each source was instead characterized using a structured descriptive framework addressing case ascertainment, the clarity and appropriateness of the reported denominator, the basis of exposure attribution or confirmation, completeness of outcome reporting, missing information, and potential overlap with other retained records. This characterization informed interpretation of the evidence and its limitations; it was not a validated quality score or a substitute for formal risk-of-bias assessment.

Language, nomenclature, and ethics

Non-English titles and clinically relevant passages were translated for source assessment and synthesis, while uncertainties arising from source access or interpretation were preserved. Current taxonomic nomenclature followed Plants of the World Online, which recognizes *Brugmansia suaveolens* and *Datura innoxia* as accepted names. Original spellings used in publication titles, such as *Datura innoxia*, were retained when citing or referring directly to those sources [7, 8]. This review relied exclusively on previously published reports and involved no collection of new human-participant or patient-level data.

RESULTS

Study set and source composition

The final synthesis included 42 source records (Table 1; Supplementary Table S1), including original Hungarian toxicology-service data presented within the Kerchner and Farkas minireview [1]. The selected set comprised 13 outbreak/public-health or mass-exposure reports, 11 poison-center/toxicology-service reports, and 18 hospital/clinical series spanning 19 countries or regions. Publication years ranged from 1885 to 2026. Exact source-level counts ranged from 10 to 688, while the Australian official record reported more than 190 potential cases. These counts were retained at the source level and were not combined into an aggregate patient population. The complete source register contained 44 stable identifiers, of which 42 were included in the final synthesis and two were not.

Attribution and outcome-reporting coverage

Eight records had analytical or botanical source support, one had official attribution, one had mixed within-report confirmation, 29 relied on clinical or epidemiological attribution, and three were classified as contextual reports with uncertain genus attribution. The 10 records in the analytical/botanical, official, or mixed categories did not

Table 1. Characteristics and source status of the 42 selected reports

ID	Author/year (reference)	Region	Report type	Reported denominator	Exposure/source	Source status and attribution
F-01	Mutebi 2022 (9)	Uganda	Food-contamination/public-health outbreak investigation	293 suspected cases	Contaminated humanitarian relief food (fortified com-soy blend)	Full article; clinical findings reported for defined subsets. Attribution: analytically/botanically supported source with epidemiologically defined human cases.
F-02	Doan 2019 (10)	Taiwan	Retrospective poison-control-center case series, 1986-2015	203 cases (114 <i>Datura</i> ; 89 <i>Brugmansia</i>)	Predominantly medicinal use without consultation; plant misidentification and exposure to various plant parts	Indexed abstract with denominator and outcome information. Attribution: clinical/epidemiological.
F-03	FSANZ 2022/2025 (11)	Australia	Official public-health incident and food-recall report	>190 potential cases reported in the available official record; final case classification incomplete	Baby spinach contaminated with thornapple (<i>Datura stramonium</i>)	Official public-health source with a provisional case count and incomplete follow-up. Attribution: official public-health attribution.
F-04	Forrester 2006 (12)	USA/Texas	Retrospective poison-center exposure series, 1998-2004	188 reported human exposures	Predominantly intentional abuse or misuse; 82% of cases with known disposition were at, en route to, or referred to a health-care facility	Indexed abstract with denominator and summary outcome information. Attribution: clinical/epidemiological.
F-05	Kerchner 2020 (1)	Hungary	National toxicological-information-service analysis, 2005-2017	167 cases (65 <i>Brugmansia</i> ; 102 <i>Datura</i>)	Accidental ingestion (50), abuse (101), and suicide attempts (16)	Minireview containing original Hungarian toxicology-service data. Attribution: clinical/epidemiological.
F-06	Fuchs 2011 (13)	Switzerland	National poison-center study of moderate, severe, or lethal plant mono-intoxications, 1995-2009	75 <i>Datura/Brugmansia</i> cases within 255 moderate, severe, or lethal plant mono-intoxications	Predominantly plant abuse; <i>Datura/Brugmansia</i> were the leading taxa in the clinically significant cohort	Full article; the analyzed outcome cohort required plant-specialist identification and physician follow-up. Attribution: botanically supported clinical attribution.
F-07	Plackova 2022 (14)	Slovakia	Retrospective poison-center analysis/conference abstract	93 callers/consumers (69 symptomatic)	Deep-frozen spinach contaminated with <i>D. stramonium</i>	Original conference abstract; implicated food underwent laboratory testing. Attribution: analytically supported food source.
F-09	Klein-Schwartz 1984 (15)	USA/Maryland	Poison-center exposure series	73 poison-center exposures	Jimsonweed exposure among adolescents and young adults	Full article; discrepancies within the source were present in the reported study-period duration and treatment count. Attribution: clinical/epidemiological.
F-10	Perharič 2013 (16)	Slovenia	Food-contamination outbreak and risk-assessment study	73 symptomatic consumers	Buckwheat foods contaminated with <i>D. stramonium</i> seeds	Indexed abstract with denominator and analytical findings. Attribution: analytically/botanically supported food source.
F-11	Li Xiaohua 2023 (17)	China/Shuozhou	Food-contamination outbreak investigation	64 cases among 105 exposed individuals	Yellow cake made from broomcorn/glutinous broomcorn flour contaminated during harvesting	Full article; implicated food and biological samples underwent laboratory testing. Attribution: analytically supported food and biological evidence.
F-12	Bhat 2025 (18)	India	Mass-poisoning cluster with neuropsychiatric presentation	50 symptomatic hospitalized cases	Compatible shared-meal cluster; contaminant source remained inconclusive	Full article; the toxicant and botanical contaminant were not definitively established. Attribution: contextual/uncertain genus attribution.
F-13	Islam 2022 (19)	India/West Bengal	Pediatric clinical series/research letter	47 children with <i>Datura</i> intoxication	Pediatric ingestion; detailed exposure-confirmation methods were not available in the accessible source material	Publisher-accessible material reported the denominator, intensive-care admissions, and death count. Attribution: clinical/epidemiological.
F-15	Zhang 1961 (20)	China	Historical composite of three physician reports	42 cases (19 + 13 + 10), treated as one composite source record	Source-reported <i>Datura</i> ingestion involving plant parts or preparations; the two fatal cases followed seed	Full scanned article. Attribution: clinical/epidemiological source attribution; the two fatal cases lacked modern individual-level analytical

Table 1 continued.

ID	Author/year (reference)	Region	Report type	Reported denominator	Exposure/source	Source status and attribution
F-16	Oderda 1978 (21)	USA/Baltimore	Meeting abstract/epidemic report	38 poison-center-involved ingestions/exposures	Jimsonweed seed ingestion; 24 individuals received emergency-room treatment and 14 were not referred or declined hospital care	Original meeting abstract; clinical details were reported for 24 of the 38 exposures. Attribution: clinical/epidemiological.
F-17	Zhang Hu 2017 (22)	China/Tianjin	Mixed-exposure clinical case series	32 cases	Leaves, 14; seeds, 1; infusion/medicinal wine, 4; external paste, 8; flower smoke, 5	Full article. Attribution: clinical/epidemiological.
F-18	Shervette 1979 (23)	USA	Adolescent recreational-abuse case series	29 hospitalized patients	Recreational jimsonweed use among adolescents	Full article and indexed bibliographic record; urine atropine or scopolamine was detected in 17 of 26 tested patients. Attribution: clinical/epidemiological, with partial human-specimen analytical support.
F-19	Rodgers 1993 (24)	USA/Kentucky	Seven-year regional poison-center case series	29 poison-center reports; 20 patients complied with emergency-department referral	Intentional abuse in 28 of 29 reports, predominantly involving seed ingestion	Indexed abstract with denominator, treatment, and outcome information. Attribution: clinical/epidemiological.
F-20	Niewińska 2007 (25)	Poland	Retrospective pediatric hospital case series, 2000-2003	28 pediatric cases	Intentional ingestion of <i>D. stramonium</i> seeds; ages 13-17 years	Full article; cases were clinically diagnosed as anticholinergic syndrome. Attribution: clinical/epidemiological.
F-21	Luo Rong 2020 (26)	China	Neuropsychiatric/stroke-mimic clinical series	24 cases	<i>Datura</i> seed wine in 23 cases; fruit ingestion in 1	Full article. Attribution: clinical/epidemiological.
F-22	CDC 1995 (27)	USA/Texas, New York, and California	Official public-health surveillance/outbreak report	24 exposed persons (23 symptomatic)	Jimsonweed ingestion/exposure in multiple clusters	Full CDC/MMWR report; analytical findings were available for the Texas cluster. Attribution: mixed confirmation, with analytical evidence in the Texas cluster and clinical/epidemiological attribution in the other clusters.
F-23	Guirola-Fuentes 2026 (28)	Angola/Luanda and Malanje	Retrospective descriptive series of two mass-exposure events in 2021	21 acute poisonings (15 Luanda; 6 Malanje)	Intentional consumption for recreational abuse	Full Spanish-language article. Attribution: clinical/epidemiological.
F-24	Enfield 2018 (29)	USA/Arizona	<i>Datura</i> -specific subgroup within an 8-year regional poison-center review	21 <i>Datura</i> exposure calls	Poison-center-reported <i>Datura</i> exposures involving varied circumstances	Full article with an extractable <i>Datura</i> -specific subgroup. Attribution: clinical/epidemiological.
F-25	Li Jingwei 2013 (30)	China	Neuropsychiatric/medicinal-wine clinical series	21 cases	<i>Datura</i> seed wine	Full article. Attribution: clinical/epidemiological.
F-26	Torbus 2002 (31)	Poland/Silesia	Pediatric hospital case series, 1999-2001	21 children	Predominantly intentional use among adolescents; one accidental ingestion in a 3-year-old child	Indexed Polish-language abstract; toxicological confirmation was reported in 4 cases. Attribution: clinical/epidemiological, with partial toxicological confirmation.
F-27	Karim 1993 (32)	Bangladesh/Chittagong	<i>Datura</i> -specific subgroup within a retrospective hospital cohort of poisoning admissions in 1987	20 <i>Datura</i> cases among 76 poisoning admissions	Hospital-record classification; route and plant-part details were not reported separately	Full article with a tabulated <i>Datura</i> -specific subgroup. Attribution: clinical/epidemiological.
F-28	Amini 2012 (33)	Iran/Mashhad	Hospital case series, 2008-2011	19 admitted patients	Predominantly accidental pediatric ingestion	Full article. Attribution: clinical/epidemiological.
F-29	Qiu Qing 2013 (34)	China/Guangxi	Rural primary-hospital clinical series	18 cases	Fruit, 12; leaves, 2; root/stem decoction, 4	Full article; final outcomes were unavailable for two transferred patients. Attribution: clinical/epidemiological.

Table 1 continued.

ID	Author/year (reference)	Region	Report type	Reported denominator	Exposure/source	Source status and attribution
F-30	Salen 2003 (35)	USA	Epidemic report with emphasis on management and antidotal therapy	17 victims	<i>D. stramonium</i> epidemic ingestion	Full article; potential overlap with the Tiongson report could not be excluded, and Tiongson was not counted as a separate source record. Attribution: clinical/epidemiological.
F-31	Jaspersen-Schib 1996 (36)	Switzerland	<i>Datura</i> -specific subgroup within a national toxicology-center series of severe plant poisonings, 1966-1994	17 severe <i>D. stramonium</i> poisonings	<i>D. stramonium</i> ingestion within a severe plant-poisoning series	Indexed German-language abstract with an extractable severe <i>Datura</i> -specific subgroup. Attribution: clinical/epidemiological.
F-32	Zhao Xiaoli 2006 (37)	China/Shaanxi	Pediatric clinical series of accidental ingestion	16 pediatric cases	Accidental <i>Datura</i> seed ingestion among rural children	Full article. Attribution: clinical/epidemiological.
F-33	Ramirez 1999 (38)	Venezuela	Honey-associated atropine-poisoning report	15 cases	Wasp honey; indirect <i>Datura</i> -associated atropine exposure	Indexed abstract. Attribution: contextual/uncertain genus attribution through an indirect honey-associated pathway.
F-34	CDC Moonflower 2003 (39)	USA/Ohio	Official outbreak report involving adolescents	14 adolescents/cases	Suspected <i>Datura innoxia</i> seed/tea exposure; reported as <i>D. innoxia</i> in the original CDC source	Full CDC/MMWR report; botanical attribution included a plant photograph, without a reported tropane-alkaloid assay. Attribution: clinical/epidemiological.
F-35	Caprai 2024 (40)	Italy	Four food-associated intoxication incidents with analytical testing of implicated food	13 people: 8 in one incident without available meal leftovers and 5 across three incidents with analytically positive leftovers	Spinach or spinach-based foods; atropine and scopolamine were detected in leftovers from the three incidents involving five people, while the eight-person incident was epidemiologically associated	Full article; analytical confirmation of tropane alkaloids was available for the three incidents involving five people, but no implicated food remained for testing in the eight-person incident. Attribution: contextual/uncertain <i>Datura</i> genus attribution; tropane alkaloid exposure was analytically supported in three incidents.
F-36	Blackford 2010 (41)	USA/Akron, Ohio	Retrospective adolescent hospital series, 2002-2007	11 <i>D. stramonium</i> or <i>D. innoxia</i> ingestions; <i>D. innoxia</i> was reported as <i>D. innoxia</i> in the source	Adolescent jimsonweed or moonflower ingestion	Indexed abstract with laboratory findings. Attribution: clinical/epidemiological.
F-37	Rwiza 1991 (42)	Tanzania/Urugi	Food-contamination outbreak/hospital case series	10 hospitalized patients	Millet stiff porridge contaminated with <i>D. stramonium</i> seeds	Indexed abstract describing toxicological examination of the implicated food. Attribution: analytically/botanically supported food source with epidemiologically linked clinical cases.
F-38	Roblot 1995 (43)	France	Retrospective clinical series	10 <i>D. stramonium</i> intoxications	Hallucinogenic use; all patients were hospitalized because of agitation	Indexed French-language abstract. Attribution: clinical/epidemiological.
F-39	Wang Qiang 1997 (44)	China/Inner Mongolia	Clinical report of integrated emergency treatment	10 cases	Three cases were described in detail: fruit ingestion in 2 and leaf decoction in 1; exposure routes for the remaining cases were not individually reported	Full article; detailed clinical information was provided for three individual cases. Attribution: clinical/epidemiological.

Table 1 continued.

ID	Author/year (reference)	Region	Report type	Reported denominator	Exposure/source	Source status and attribution
F-40	Isbister 2003 (45)	Australia/Newcastle	Hospital toxicology-unit series; retrospective analysis of prospectively recorded admissions, July 1990-June 2000	33 analyzed patients among 35 identified presentations; information was unavailable for 2	Presumed <i>Brugmansia</i> exposure based on patient history and description: 31 oral exposures and 2 smoke inhalations; 31 recreational exposures and 2 deliberate self-poisonings	Full article. Attribution: clinical/epidemiological attribution; <i>Brugmansia</i> identification was presumptive from exposure history and description, with no plant specimen submitted for formal identification and no reported human alkaloid confirmation.
F-41	Torrents 2023 (46)	France/southeastern poison-center catchment	<i>Datura</i> -specific subgroup within a retrospective poison-center series of plant self-poisoning, 2002-2021	11 <i>Datura</i> exposures (10 symptomatic) within 262 plant self-poisonings	Intentional self-poisoning; <i>Datura</i> -specific plant parts and co-ingestants were not separately detailed	Full publisher article with an extractable <i>Datura</i> -specific subgroup. Attribution: clinical/epidemiological attribution to the <i>Datura</i> genus; uniform botanical or analytical confirmation was not established.
F-42	Aga and Geyid 1992 (47)	Ethiopia/Middle Awash	Public-health investigation of a food-associated outbreak, July-August 1984	688 cases meeting the stated outbreak definition	Corn-flour foods linked to grain contaminated with <i>D. stramonium</i> ; the investigation included harvesting/storage/milling assessment and flour testing	Primary journal report. Attribution: botanical/chemical support in the implicated grain/flour with clinically defined human cases; no individual human-specimen confirmation was reported.
F-43	Dong 2008 (48)	China/Huaning, Yunnan	Investigation of a rural banquet outbreak on 27 October 2007	27 affected consumers of the implicated dish among 71 banquet attendees	Meat dish prepared with mistakenly used herbal material; qualitative testing of leftovers for <i>Datura</i> /alkaloids was positive	Full article. Attribution: analytically supported implicated food; no individual human assay was reported.
F-44	Banerjee 1885 (49)	India/Etawah	Historical dispensary case series, December 1882-January 1884	32 patients in the original case table	Source-reported seed-containing food in a criminal/adulteration context	Full historical article with tabulated outcomes and clinical narratives. Attribution: historical clinical attribution to <i>Datura</i> without modern botanical or analytical confirmation.

F-IDs are source identifiers used consistently across the manuscript and supplementary material and are distinct from reference numbers. F-08 and F-14 remain in the source register but were not included in the final synthesis. Source-level denominators were not summed as independent patient counts. Analytical confirmation of implicated food or plant material does not imply individual human-specimen confirmation.

constitute a uniformly tested patient cohort, because the basis and level of confirmation varied across sources.

Acute clinical status was classified as complete for the relevant clinical denominator in 14 of 42 records (33.3%), partial or ongoing in 3 of 42 (7.1%), ambiguous in 3 of 42 (7.1%), and not evaluable from the available material in 22 of 42 (52.4%). The not-evaluable category includes both records in which accessible material did not establish final acute status and records affected by source-access limitations; it therefore should not be interpreted as evidence of inadequate outcome reporting in every original full article. These proportions describe reporting at the source-record level and are not patient-level recovery, mortality, or loss-to-follow-up rates.

Where the clinical denominator differed from the broader exposure denominator, the two were retained separately. For example, the Slovak report described 69 symptomatic individuals among 93 callers or consumers, whereas the Shuozhou report described 64 clinical cases among 105

exposed individuals. Table 2 and Supplementary Outcome_Status present acute clinical status separately from numerical mortality reporting and later follow-up.

Exposure settings

Food-associated incidents included 293 suspected cases in Uganda and the Australian official record of more than 190 potential cases [9,11]. The Ethiopian investigation identified 688 clinical cases associated with contaminated corn flour; larger but internally inconsistent clinic-register totals were not used in the synthesis [47]. Dong reported 27 affected consumers of an implicated banquet dish among 71 attendees, with positive qualitative testing of the food and subsequent recovery and discharge of the affected group [48]. Other reports involved buckwheat, broomcorn, millet, spinach, and shared meals.

In the Caprai report, implicated food leftovers from three incidents involving five people tested positive, whereas no leftovers were available from another incident involving eight people; no *Datura* taxon was identified. The Bhat

Table 2. Acute clinical status, source-attributed outcomes, and possible overlap

ID	Outcome / death reporting	High-acuity / management observations	Confirmation and acute endpoint coverage	Possible overlap
F-01	Five deaths were reported; the symptom table used a denominator of 91 rather than all 293 suspected cases.	Intravenous fluids, activated charcoal, and sedatives were reported for the clinically characterized subset; treatment frequencies were not available for all 293 suspected cases.	The implicated food was analytically supported by detection of 14 tropane alkaloids (including atropine and scopolamine), Solanaceae seed proteins, and <i>D. stramonium</i> DNA; no human-specimen confirmation was reported. Acute status: U (not evaluable) . Five deaths and subset-level clinical data did not establish final acute status for all 293 suspected cases.	No potential overlap with another retained report was identified.
F-02	Seventy-three cases were classified as severe; no deaths were reported among 203 cases.	Physostigmine was administered to 40 patients; the observational data do not establish comparative treatment effectiveness or causality.	Exposure was attributed by the source to <i>Datura</i> or <i>Brugmansia</i> ; the accessible abstract did not establish laboratory confirmation for every case. Acute status: U (not evaluable) . Mortality and severity were reported for the full denominator, but complete acute resolution or discharge was not established.	Chang 1999 was not counted separately because independence from this Taiwan poison-center series could not be established.
F-03	Several hospitalizations were reported, and most cases were described as recovering rapidly; final case classification and outcomes remained incomplete.	Public-health recall measures and clinical evaluation were advised; treatment frequencies were not reported.	The official investigation attributed the incident to <i>D. stramonium</i> contamination; detailed analytical methods were not provided in the available public-health record. Acute status: U (not evaluable) . The potential-case count and follow-up remained provisional.	The record represents a single multi-jurisdictional incident; no jurisdiction-specific reports were counted separately.
F-04	Among cases with a known medical outcome, 89% had moderate or major effects; the abstract did not provide a <i>Datura</i> -specific death count.	Hallucinations, tachycardia, agitation, mydriasis, and confusion were commonly reported. Intravenous fluids, activated charcoal, cathartics, and benzodiazepines were among the treatments reported in this historical series.	Jimsonweed exposure was identified through poison-center reporting; laboratory confirmation was not specified. Acute status: U (not evaluable) . Medical outcomes were available only for a subset of the 188 reported exposures.	No potential overlap with another retained report was identified.
F-05	Of 167 cases, 145 were reported as fully recovered and 22 required further hospital treatment; no fatal intoxications were reported.	Twelve percent of major plant-poisoning outcomes recorded by the service were attributed to <i>Datura/Brugmansia</i> ; case-level treatment details were not reported.	Plant taxa were recorded by the toxicology service, but analytical confirmation was not specified for individual cases. Acute status: P (partial/ongoing) . Final resolution was established for the 145 recovered cases but not for the 22 patients requiring further treatment.	Only the original Hungarian toxicology-service dataset was included from the minireview; other reports discussed in that review were treated as separate source records where eligible.
F-06	No fatality was attributed to <i>Datura/Brugmansia</i> ; all four deaths in the overall plant-poisoning cohort involved other taxa.	Severe cases included delirium, seizures, respiratory depression, and one intubation; physostigmine and benzodiazepines were reported in selected cases.	Plant identification by a specialist and probable/confirmed causality criteria supported attribution; analytical confirmation was not present for every case. Acute status: U (not evaluable) . Severity and taxon-specific mortality were reported, but final acute status for the entire <i>Datura/Brugmansia</i> subgroup was not established.	No patient overlap with F-31 was identified; the two Swiss reports covered consecutive, non-overlapping periods (1966-1994 and 1995-2009).
F-07	Sixty-four mild and five moderate poisonings were reported; symptoms resolved within 48 hours.	Seven of 69 symptomatic individuals attended hospital, three were hospitalized, and symptomatic treatment was provided without physostigmine.	Atropine and scopolamine were confirmed in the implicated product, which the source attributed to <i>D. stramonium</i> contamination. Acute status: R (completed) . All 69 symptomatic cases reportedly resolved within 48 hours; the broader denominator of 93 callers/consumers was retained separately.	No separate Slovak report representing the same event was included.
F-09	No death was reported. The abstract reported 59 medically treated patients, whereas one full-text accounting reported 58; three dispositions were unknown or lost to follow-up.	Physostigmine was administered to 23 medically treated patients, and one seizure was reported.	Jimsonweed exposure was identified clinically and from the reported exposure history. Acute status: P (partial/ongoing) . Three dispositions remained unknown, and the 58/59 treatment-count discrepancy was preserved as reported.	Potential overlap with F-16 could not be excluded because of the shared Maryland Poison Center setting and overlapping authorship.
F-10	Acute antimuscarinic symptoms were reported, but complete recovery or mortality follow-up was not stated in the accessible abstract.	Treatment information was available for 46 questionnaire respondents and did not represent the full cohort of 73 symptomatic consumers.	<i>D. stramonium</i> seeds and atropine/scopolamine were identified in the contaminated buckwheat products. Acute status: U (not evaluable) . Clinical details were available for 46 of 73 symptomatic consumers, but final acute outcomes for the full clinical denominator were not stated in the accessible abstract.	No potential overlap with another retained Slovenian report was identified.

Table 2. Continued

ID	Outcome / death reporting	High-acuity / management observations	Confirmation and acute endpoint coverage	Possible overlap
F-11	All 64 affected patients were hospitalized and reportedly recovered and were discharged within one week; no sequelae were reported.	Atropine and scopolamine were detected in implicated food and biological samples; 64 of 105 exposed individuals met the clinical case definition.	Laboratory evidence was available from both food and biological samples. Acute status: R (completed) . Final acute status was reported for all 64 clinical cases; the broader exposure denominator of 105 was retained separately.	No potential overlap with another retained report was identified.
F-12	All 50 hospitalized patients reportedly recovered within 36-48 hours and were discharged within two days; no deaths were reported.	Management included hydration, anxiolytics or short-acting benzodiazepines when required, and bedside psychiatric counseling.	Neither a tropane-alkaloid assay nor a confirmed botanical contaminant was reported, so the incident was not classified as definitively genus-confirmed <i>Datura</i> . Acute status: R (completed) . Final acute status was reported for all 50 patients despite uncertainty in toxicant attribution.	No potential overlap with another retained report was identified.
F-13	Fifteen of 47 children (31.9%) required intensive care, and one death (2.1%) was reported.	Seizure was associated with adverse prognosis in the source analysis; complete treatment details were not available in the accessible source material.	The source attributed the cases to <i>Datura</i> intoxication, but laboratory or botanical confirmation was not established in the accessible material. Acute status: U (not evaluable) . Intensive-care admissions and mortality were reported for the 47 children, but final acute outcomes for all survivors were not established in the accessible publisher preview.	No potential overlap with another retained report was identified.
F-15	Forty of 42 patients recovered and two died within 24 hours; both fatal cases occurred within the same family and involved patients aged 42 and 9 years.	Mydriasis was reported in all 42 cases. Unconsciousness and convulsions were described in the two fatal cases; a separate symptom table covered 32 patients rather than the full series. Historical treatments were not interpreted as current management recommendations.	Attribution was clinical/epidemiological, without modern individual-level analytical confirmation of the two fatal cases. Acute status: R (completed) . The report accounted for all 42 cases with 40 recoveries and two deaths; later follow-up was not specified.	The three component physician reports were treated as one composite source record. No potential overlap with another retained report was identified.
F-16	Final outcomes were not reported for all 38 exposures, and the available report did not establish a complete mortality outcome for the full denominator.	Among 24 patients treated in the emergency department, 14 were admitted and 10 were treated and released; physostigmine was administered to 4 patients with a reported favorable response.	Jimsonweed seed ingestion was attributed by the source. Acute status: U (not evaluable) . Clinical-care information covered 24 of 38 exposures, and admission alone was not treated as a final clinical outcome.	Potential overlap with F-09 could not be excluded; the available information did not establish independent patient populations.
F-17	All 32 patients were reported as cured and discharged.	Four cases of coma, two cases of respiratory difficulty, two cases of respiratory depression, and two cases requiring invasive ventilation were reported.	Exposure was established from clinical histories reported in the full article. Acute status: R (completed) . Final acute outcome was reported for the entire 32-patient cohort.	No potential overlap with another retained report was identified.
F-18	Full recovery was reported for all 29 hospitalized patients, with no serious complications described.	The report described a hospitalized adolescent series; treatment observations were not used to infer comparative effectiveness.	Jimsonweed abuse was reported as the exposure. Atropine or scopolamine was detected in urine in 17 of 26 tested patients among the 29 hospitalized patients. Acute status: R (completed) . A whole-cohort recovery statement was available for all 29 hospitalized patients.	No potential overlap with another retained report was identified.
F-19	The abstract states that all patients recovered uneventfully; however, only 20 of the 29 poison-center reports complied with emergency-department referral, and it is unclear whether the recovery statement applies to the full 29-report denominator or only to those who received hospital evaluation.	Seventeen patients were admitted; activated charcoal was administered to 17 patients, and three received diazepam or haloperidol. These historical treatment observations were not interpreted as evidence of comparative effectiveness.	Jimsonweed ingestion was identified through poison-center reporting; analytical confirmation was not specified. Acute status: A (ambiguous) . The scope of the recovery statement could not be mapped unambiguously to the full denominator of 29 reports.	No potential overlap with another retained report was identified.

Table 2. Continued

ID	Outcome / death reporting	High-acuity / management observations	Confirmation and acute endpoint coverage	Possible overlap
F-20	All 28 children were reported to have recovered without adverse effects or late sequelae.	Three children required intubation/mechanical ventilation; physostigmine was administered to 14 and neostigmine to 6; all were hospitalized.	Diagnosis was based on the reported seed ingestion and clinical presentation; laboratory confirmation was not stated. Acute status: R (completed). A whole-cohort recovery statement was available for all 28 children; details of longer-term follow-up were limited.	No potential overlap with another retained report was identified.
F-21	Toxic symptoms were reported to have resolved in all 24 cases within 48 hours.	One patient developed coma; five were initially diagnosed with cerebral infarction; neostigmine was administered to 8 patients and urinary catheterization was required in 10. No mechanical ventilation or intensive-care admission was reported.	Exposure was established from histories described in the full article. Acute status: R (completed). Resolution of acute toxic symptoms was reported for the full 24-case cohort.	No potential overlap with another retained report was identified.
F-22	Two deaths occurred in the four-person Texas cluster; of the two survivors, one was symptomatic and one asymptomatic. Final acute outcomes were not reported for the entire set of 24 exposed persons.	In New York, 3 of 14 cases required intensive care. In California, 4 of 6 cases required intensive care; these four received physostigmine and activated charcoal and were discharged the following day. Management and analytical findings were cluster-specific.	In the Texas cluster, atropine (55 ng/mL) was detected in postmortem blood from one decedent, and atropine, scopolamine, and ethanol were detected in the consumed tea. Analytical testing was not reported for every exposed person or cluster. Acute status: U (not evaluable). Cluster-specific deaths and dispositions were described, but final acute status was not established for the full clinical denominator of 23 symptomatic persons; total exposure denominator was 24.	No potential overlap with another retained report was identified.
F-23	The source reported 13 unfavorable outcomes and described 13 of 15 Luanda cases as having 86.7% "lethality"; however, its unfavorable-outcome definition combined death with severe neurological sequelae. An exact number of deaths could therefore not be separated from the reported composite outcome.	Sixteen severe presentations were reported, including seizures, deep coma, ventricular arrhythmias, and hypertensive crises.	Cases were attributed clinically to <i>D. stramonium</i> ; analytical confirmation was not reported. Acute status: U (not evaluable). Because the reported unfavorable outcome combined death and severe neurological sequelae, a separable final clinical status was not available for the relevant denominator.	No potential overlap with another retained report was identified.
F-24	Fourteen of 21 <i>Datura</i> exposure calls were symptomatic. No <i>Datura</i> -attributed death was reported.	One major case involving a gardening exposure and anaphylaxis required intensive care and recovered; this presentation was not an antimuscarinic toxidrome. Most other management information was reported only for the broader poison-center cohort.	Exposure attribution was based on poison-center coding, with variable clinical verification. Acute status: U (not evaluable). The documented recovery of the intensive-care/anaphylaxis case did not establish final acute outcomes for all 14 symptomatic <i>Datura</i> exposures; the total <i>Datura</i> exposure-call denominator was 21.	No potential overlap with another retained Arizona report was identified.
F-25	All 21 patients were reported to have recovered, with complete resolution of toxic symptoms after 48 hours.	Three patients had seizures. Gastric lavage was reported in 4 cases, cathartic therapy in 13, and neostigmine in 11; no intensive-care admission or mechanical ventilation was reported. These treatment observations reflect historical/local practice and were not interpreted as current treatment recommendations.	Exposure was established from the reported history. Acute status: R (completed). Recovery and resolution of acute toxic symptoms were reported for the entire 21-patient cohort.	No potential overlap with another retained report was identified.
F-26	Final patient-level outcomes and mortality status were not reported in the accessible indexed abstract.	One child was treated in intensive care. Intravenous hydration was the main treatment; mean hospitalization was 3.8 days.	The source attributed the cases to <i>D. stramonium</i> . Toxicological testing confirmed poisoning in 4 cases; the remaining diagnoses were based on exposure history and clinical presentation. Acute status: U (not evaluable). Final acute outcomes were not established from the accessible source material.	No potential overlap with another retained report was identified.

Table 2. Continued

ID	Outcome / death reporting	High-acuity / management observations	Confirmation and acute endpoint coverage	Possible overlap
F-27	Two deaths attributed by the source to <i>Datura</i> were explicitly tabulated among 20 <i>Datura</i> cases.	Additional <i>Datura</i> -specific severity and treatment information was not reported separately.	Agent classification was based on retrospective hospital records; analytical confirmation was not reported. Acute status: U (not evaluable) . Two deaths were documented within the 20-case subgroup, but final acute outcomes for the remaining patients were not specified.	No potential overlap with another retained report was identified.
F-28	No short-term mortality was reported during the three-year study period.	Irritability and sinus tachycardia predominated; no seizures or coma were reported. Benzodiazepines controlled most symptoms, and physostigmine was not required.	Diagnosis was based on clinical findings and exposure history; analytical confirmation was not described. Acute status: U (not evaluable) . Mortality status was reported, but complete acute resolution or discharge for the full cohort was not explicitly established.	No overlap with another selected report was identified. A later record from the same hospital covered a non-overlapping study period (2013-2023/24).
F-29	Sixteen patients were reported as cured and discharged; two severe cases were transferred, and their final outcomes were not reported.	Neostigmine was administered to 10 patients and pilocarpine to 6; two severe cases were transferred. These treatment observations reflect historical/local practice.	Exposure was based on the reported history. Acute status: P (partial/ongoing) . Final acute status was established for 16 patients but remained unavailable for the two transferred cases.	No potential overlap with another retained report was identified.
F-30	All 17 victims were reported to have recovered without long-term sequelae; no deaths were reported.	Fifteen patients were admitted and 13 required intensive care; gastric lavage was reported in 14 and physostigmine in 3. Historical lavage use was not interpreted as routine contemporary practice.	<i>D. stramonium</i> ingestion was reported by the source. Acute status: R (completed) . Recovery was reported for all 17 victims; the duration of longer-term follow-up was not specified.	Potential overlap with the Tionsgon report could not be excluded; Tionsgon was therefore not counted as a separate source record.
F-31	<i>Datura</i> -specific final outcomes and mortality were not provided in the accessible indexed record.	Within the severe <i>D. stramonium</i> subgroup, anticholinergic syndrome was reported in 17 cases, psychosis in 12, and coma in 2.	The subgroup was assigned to <i>D. stramonium</i> by the reporting toxicology center. Acute status: U (not evaluable) . The severe subgroup was identifiable, but final acute outcomes were not available from the accessible record.	No potential overlap with another retained report was identified; the study period preceded the later Swiss series.
F-32	All 16 children were reported as cured; 12 had normal findings at 10-day follow-up.	Four children had seizures, two had coma, and fever was reported in 14, exceeding 40°C in one. Gastric lavage, cathartic/enema therapy, diazepam as needed, and neostigmine in all 16 were reported as historical/local management practices.	Seed ingestion was reported as the exposure. Acute status: R (completed) . Acute recovery was reported for all 16 children; subsequent 10-day follow-up was available for 12.	No potential overlap with another retained report was identified.
F-33	Two heatstroke deaths were reported among 15 honey-associated atropine-poisoning cases; these deaths were treated as associated/contextual rather than source-attributed <i>Datura</i> deaths.	Detailed treatment information was not reported in the accessible abstract.	Atropine-contaminated honey was reported in association with <i>Datura</i> plants near wasp nests; exposure was indirect rather than direct plant ingestion. Acute status: U (not evaluable) . Two associated deaths were reported, but final acute outcomes for the remaining 13 cases were not established from the accessible abstract.	No potential overlap with another retained report was identified.
F-34	All 14 adolescents were reported to have recovered fully.	Supportive care and benzodiazepines were reported, together with public-health investigation.	Attribution was based on the compatible clinical presentation and a submitted plant photograph; no tropane-alkaloid assay was reported. Acute status: R (completed) . Full recovery was reported for all 14 cases; no long-term effects were documented, although a defined long-term follow-up interval was not provided.	Potential overlap with F-36 could not be excluded because the October-November 2002 Akron/Cleveland exposures fall within the 2002-2007 Akron hospital-series window; patient-level linkage was unavailable.

Table 2. Continued

ID	Outcome / death reporting	High-acuity / management observations	Confirmation and acute endpoint coverage	Possible overlap
F-35	Medical evaluation or hospitalization was reported across four incidents; complete final outcomes were not reported for all 13 people.	Atropine/scopolamine were measured in leftovers from incidents 2-4 (n=5); no leftovers were available for incident 1 (n=8). Comparative treatment data were not available.	No tropane-producing plant or <i>Datura</i> taxon was botanically confirmed. Acute status: U (not evaluable) . Medical care was described, but final acute outcomes across all 13 individuals were not established.	No potential overlap with another retained Italian report was identified.
F-36	One patient met the source definition of rhabdomyolysis; final disposition and mortality status were not reported in the accessible abstract.	Creatine kinase ranged from 72 to 70,230 U/L; three patients exceeded 1,000 U/L, and the patient with CK 70,230 U/L had myoglobinuria.	Plant ingestion was reported by the source; analytical plant confirmation was not stated. Acute status: U (not evaluable) . Laboratory findings were available, but final acute disposition and mortality status were not established from the accessible abstract.	Potential overlap with F-34 could not be excluded because of the shared regional population, overlapping 2002 time window, and moonflower exposures; patient-level linkage was unavailable.
F-37	Final outcomes and mortality status were not reported in the accessible abstract.	All 10 patients were described as agitated or psychotic with classical atropine-poisoning signs.	Food samples contained <i>D. stramonium</i> seeds and an atropine-like alkaloid. Acute status: U (not evaluable) . Final acute outcomes were not established from the accessible abstract.	No potential overlap with another retained report was identified.
F-38	The abstract described a favorable prognosis but did not provide a separately tabulated death count.	Hallucinations, mydriasis, and aggressive/agitated behavior were reported; symptomatic treatment was described as effective.	Diagnosis was clinical; laboratory testing was described as useful for differential diagnosis rather than as a required confirmation method. Acute status: A (ambiguous) . The favorable-prognosis wording did not explicitly account for final resolution or discharge of each of the 10 patients.	No potential overlap with another retained report was identified.
F-39	The report stated that all 10 patients were successfully rescued; individual outcome narratives were provided for 3 cases.	Historical treatment measures were described; these intervention observations were not interpreted as generalizable current practice.	Exposure was based on the reported history. Acute status: A (ambiguous) . The whole-cohort statement of successful rescue did not explicitly define final resolution/discharge, and detailed individual outcomes were available for only 3 cases.	No potential overlap with another retained report was identified.
F-40	No deaths, seizures, coma, or arrhythmias other than sinus tachycardia were reported among the 33 analyzed patients; median hospital stay was 20 hours (IQR 12-34). A complete final-status statement for all analyzed patients was not explicit.	Mydriasis was documented in 32 of 32 patients with recorded pupil findings, delirium in 29 of 33, and tachycardia on admission in 11 of 33. Sedation was used in 19 patients and physostigmine diagnostically in 8; two traumatic injuries were reported. Glasgow Coma Scale scores below 12 were not classified as coma by the source.	<i>Brugmansia</i> exposure was presumed from patient history and description; no plant specimen was submitted for formal identification, and human alkaloid confirmation was not reported. Acute status: U (not evaluable) . The article reported symptom duration, length of stay, and absence of deaths, but did not explicitly account for final acute resolution or discharge of every analyzed patient. Information was unavailable for 2 of the 35 identified presentations.	No potential overlap with the retained Australian food-associated outbreak was identified; the reports involved different periods and exposure settings.
F-41	Within the <i>Datura</i> subgroup, no deaths were reported, 3 poisonings were classified as severe (PSS 3), and 10 of 11 exposures were symptomatic. Recovery was specifically described for one patient treated with physostigmine, but not for the entire subgroup.	One <i>Datura</i> patient received physostigmine. Intensive-care, hospitalization, and symptom totals reported for the broader cohort were not specific to the <i>Datura</i> subgroup; PSS grade 3 indicates severe poisoning but does not by itself identify a particular high-acuity event.	Attribution to the <i>Datura</i> genus was based on poison-center clinical/epidemiological classification; uniform botanical or analytical confirmation was not established. Acute status: U (not evaluable) . The clinical denominator comprised 10 symptomatic patients, whereas the explicit zero-death count applied to all 11 <i>Datura</i> exposures. Final acute recovery was not established for the full symptomatic subgroup.	No potential overlap with Roblot 1995 was identified; the later poison-center series covered 2002-2021.

Table 2. Continued

ID	Outcome / death reporting	High-acuity / management observations	Confirmation and acute endpoint coverage	Possible overlap
F-42	Nine deaths were attributed by the source to the outbreak, and 33 patients were referred for intensive medical care. Final outcomes for all surviving cases were not specified.	Antimuscarinic symptoms and severe neurological manifestations were described. Hospital referral was not interpreted as equivalent to intensive-care-unit admission, and comparative treatment data were not available.	Botanical and chemical evidence supported contamination of the implicated grain/flour, together with clinically defined human cases; individual human-specimen confirmation was not reported. Acute status: U (not evaluable). Nine deaths and 33 hospital referrals were documented, but final acute status for all surviving cases was not established. The defined clinical denominator remained 688 cases despite larger inconsistent clinic-register totals reported elsewhere in the source.	No overlapping retained Ethiopian outbreak report was identified.
F-43	All 27 affected consumers were reported to have recovered and been discharged by 6 November 2007.	Antimuscarinic manifestations were reported; two severe patients developed coma, hypotension, and incontinence. Pilocarpine and neostigmine were reported as historical/local treatment practices and were not interpreted as current management recommendations.	The implicated food had analytical support; no individual human assay was reported. Acute status: R (completed). Final acute status was reported for all 27 affected consumers; the remaining 44 of the 71 banquet attendees were not part of the affected clinical denominator.	No potentially overlapping retained event was identified.
F-44	Of 32 patients, 28 were recorded as cured and 4 as having died. One fatal course was described as enteritis, leaving direct <i>Datura</i> attribution of all four deaths uncertain.	Delirium, mydriasis, and gastrointestinal manifestations were described, with coma and terminal deterioration in fatal cases. Historical treatment descriptions were not interpreted as current therapeutic recommendations.	Attribution to <i>Datura</i> was clinical and historical, without modern botanical or analytical confirmation. Acute status: R (completed). Final acute status was recorded for all 32 patients as 28 cured and 4 deaths; the source description of enteritis in one fatal case was retained when interpreting mortality attribution.	No potentially overlapping retained Etawah report from the same period was identified.

R: completed acute status explicitly reported for the relevant clinical denominator; P: explicitly partial or ongoing status; A: ambiguous terminal wording or scope; U: acute status not evaluable from the available material. Acute-status classification, numerical mortality reporting, and later follow-up were assessed separately. R denotes completeness of acute-status reporting, not recovery alone. ICU, intensive care unit; IQR, interquartile range; PSS, Poisoning Severity Score; CK, creatine kinase.

Because of potential overlap, the four retained records forming the two pairs F-09/F-16 and F-34/F-36 were not eligible to contribute positive death counts to the descriptive source-attributed death subtotal. The resulting subtotal comprises 21 deaths explicitly attributed to *Datura* across six reports. Four historical fatal outcomes in F-44 and two honey-associated heatstroke deaths in F-33 are reported separately. Source-level denominators were not pooled, and no verified independent-cohort count was derived.

unstandardized medicinal preparations, seed-infused wine, decoctions, fruits, leaves, seeds, externally applied paste, flower smoke, accidental pediatric ingestion, recreational or suicidal use, and indirect honey-associated atropine exposure. These pathways differed substantially in preventability, case ascertainment, and certainty of exposure attribution.

Clinical themes by attribution category

The 10 reports with analytical/botanical, official, or mixed source support described clinical presentations compatible with antimuscarinic poisoning, although the level and target of confirmation differed across reports. High-acuity findings included source-attributed deaths in the Ugandan and Ethiopian outbreaks, a severe Swiss *Datura/Brugmansia* case requiring intubation, intensive-care admissions and deaths within specific clusters described by CDC in 1995, and two cases of coma in the Dong outbreak [9, 13, 27, 47, 48]. In the CDC report, analytical evidence included postmortem atropine in blood

from one Texas decedent and tropane alkaloids in consumed tea; these findings were not generalized to every exposed person or to identical causation across all clusters.

The 29 reports based primarily on clinical or epidemiological attribution likewise described central and peripheral antimuscarinic findings. Reported severity classifications and high-acuity findings included 73 severe cases in the Taiwan poison-center series, 15 intensive-care admissions among 47 children in the Islam series, two patients requiring mechanical ventilation in Zhang Hu, three ventilated children in Niewińska, and 13 intensive-care admissions among 17 victims reported by Salen [10, 19, 22, 25, 35]. Source-defined severity categories were not assumed to identify a specific high-acuity event unless that event was reported.

Zhang's 1961 report described unconsciousness and convulsions in two fatal cases; a separate symptom table was based on 32 patients rather than the full series of 42 [20]. Isbister identified 35 presentations and analyzed 33. Among

those analyzed, mydriasis was documented in 32 of 32 presentations with pupil-size data, delirium in 29 of 33, and tachycardia on admission in 11 of 33; no deaths, seizures, or coma were reported. No plant specimen had been submitted for formal identification, and the *Brugmansia* attribution therefore remained presumptive [45]. Torrents reported 11 *Datura* exposures, of whom 10 were symptomatic and three were classified as severe; the report did not provide a complete acute-outcome characterization for the entire symptomatic subgroup [46]. Blackford reported rhabdomyolysis, which was retained as a reported complication but was not automatically classified as meeting the operational high-acuity definition [41]. The Bhat, Caprai, and honey-associated reports were interpreted separately as three contextual sources because their attribution circumstances differed from the source-attributed *Datura*/*Brugmansia* reports [18, 38, 40].

Outcomes and deaths

Across six retained reports with no identified potential overlap, the original sources explicitly attributed a total of 21 deaths to *Datura*: five in Mutebi, one in Islam, two in Zhang (1961), two in the 1995 CDC report, two in Karim, and nine in Aga/Geyid [9, 19, 20, 27, 32, 47]. Zhang's 1961 report documented 40 recoveries and two deaths among 42 cases [20]. In the Ugandan and Ethiopian reports, attribution was supported by evidence from the implicated food together with clinically defined human cases rather than by uniform analytical testing of individual patients.

The 1995 CDC report documented atropine at 55 ng/mL in postmortem blood from one decedent and alkaloids with ethanol in the consumed tea; these findings do not establish identical or exclusive causation for every fatal case. Karim relied on hospital-record classification, Islam was available only through limited source material, and the two deaths in the historical Chinese report lacked modern individual-level analytical confirmation. These differences were retained when interpreting the source-attributed death subtotal.

Banerjee separately reported four fatal outcomes among 32 *Datura*-labeled clinical cases, including one death described as due to enteritis; these four deaths were therefore not automatically added to the explicit source-attributed subtotal [49]. Two heatstroke deaths in the honey-associated report were likewise retained separately [38]. Guirola-Fuentes reported a combined endpoint of death or severe neurological sequelae, so that unfavorable-outcome count was not converted into an exact number of deaths [28]. When mortality status was not reported or could not be established from the available material, it was retained as missing rather than coded as zero.

Overlap, source access and non-inclusion

The Onen record was not included because the available primary-source material did not permit verification of the minimum denominator and exposure information required for eligibility. The Aliakbari report was not established as published within the 31 July 2026 eligibility boundary; the

available issue record was dated August 2026 [50, 51]. Absence of complete outcome information alone was not a reason for non-inclusion.

Chang and Tiongson were not counted as separate source records because their independence from the corresponding Taiwan and Salen reports, respectively, could not be established [52, 53]. Within the selected set, two pairs—F-09/F-16 and F-34/F-36—were considered potentially overlapping. The two Swiss reports covered consecutive study periods, and only the original Hungarian toxicology-service dataset contributed from the Kerchner and Farkas minireview. Nine Chinese-language reports were retained in the final synthesis.

Supplementary Source_Decisions summarizes documented eligibility and source-level decisions relevant to the final synthesis; it should not be interpreted as an exhaustive inventory of all potentially relevant literature.

DISCUSSION

The principal contribution of this review is improved source-level interpretability rather than a new treatment algorithm or an exhaustive global inventory of poisoning cases. Kerchner and Farkas and Krenzelok emphasize the worldwide poisoning potential and management of *Datura*/*Brugmansia* toxicity; Pillay and Sasidharan address clinical toxicology; Fatur and Kreft examine anticholinergic Solanaceae in temperate Europe; Aćimović reviews 21st-century *D. stramonium* poisonings; and Gravador and colleagues focus on food-associated tropane alkaloids and analytical methods [1-6].

The present review provides a complementary perspective through its pragmatic threshold of at least 10 cases or exposures, inclusion of *Brugmansia* and historical reports, and explicit source-level characterization of denominators, exposure attribution, outcome reporting, and potential overlap. Among the 42 selected records, 10 had analytical/botanical, official, or mixed support, 29 relied primarily on clinical/epidemiological attribution, and three were contextual reports with uncertain genus attribution. Complete acute clinical status for the relevant denominator was explicit in 14 records, whereas it was not evaluable from the available material in 22.

These patterns characterize the evidentiary structure of the selected source set rather than a hierarchy of methodological quality or a measure of patient prognosis. Differences in source accessibility, historical reporting practices, case ascertainment, and exposure confirmation limit direct comparisons across reports and preclude interpretation of these descriptive categories as validated quality rankings.

Food-associated incidents were prominent among the larger and more strongly source-supported reports and, in some instances, involved many individuals exposed through a single shared product or meal. The prevention priorities suggested by these recurrent events include control of toxic

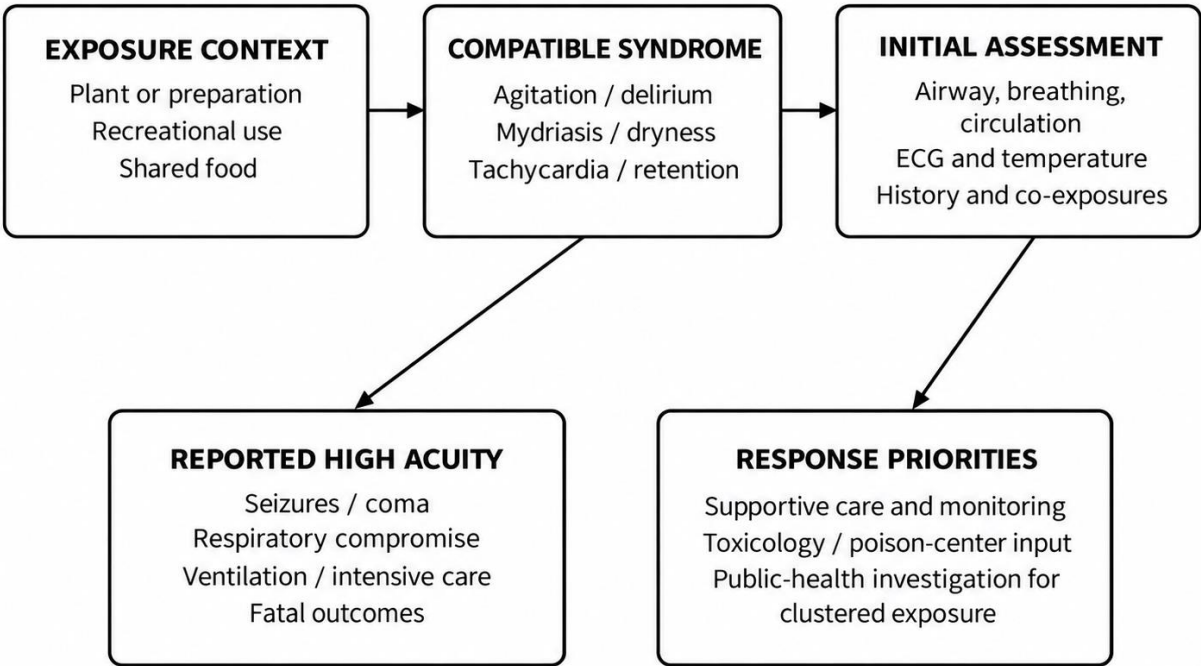
weeds, inspection during harvesting and food processing, product traceability, prompt preservation and testing of implicated food, and early communication among clinicians, poison centers, laboratories, and public-health authorities. These priorities represent inferences from recurring outbreak patterns rather than measured effects of specific preventive interventions. Clustering of compatible illness after a shared meal should therefore raise suspicion for a common-source toxic exposure and prompt timely public-health assessment.

The recurrent combination of central and peripheral antimuscarinic findings is consistent with previous toxicology reviews [1-3]. A compatible history of plant exposure, medicinal or recreational preparation, or shared-food ingestion may strengthen clinical suspicion, but this review did not evaluate diagnostic accuracy. Figure 2 is intended as an orientation aid for exposure assessment,

diagnostic or treatment algorithm. The available evidence does not establish the sensitivity or specificity of any individual sign or symptom.

Treatment approaches varied substantially across reports and time periods and were influenced by differences in illness severity; consequently, the observations summarized here should not be interpreted as comparative-effectiveness evidence. Contemporary management should be guided by current toxicology recommendations, including supportive care, appropriate monitoring, and selective use of physostigmine in carefully assessed patients when indicated. Historical reports of gastric lavage or cathartic therapy should not be interpreted as support for their routine use in current practice [54-61].

Future reports would be more comparable if they followed a minimum reporting dataset that specified the exposure source, botanical or analytical confirmation



Orientation aid only; not a validated diagnostic or treatment algorithm. Historical treatment observations do not establish comparative efficacy.

Figure 2. Exposure contexts and clinical-response orientation for human *Datura* and *Brugmansia* poisoning. The figure summarizes recurring exposure settings, compatible antimuscarinic features, reported high-acuity outcomes and response priorities. It is an orientation aid, not a validated diagnostic or treatment algorithm.

recognition of reported high-acuity features, and response priorities; it should not be interpreted as a validated

method, human-specimen testing when performed, case definition, exact denominator type, symptom denominator,

high-acuity events, intensive-care or ventilation status, final clinical outcome, completeness of follow-up, and the event location and time window needed to assess potential overlap. A shared or centralized poisoning registry incorporating these fields could facilitate recognition of potentially duplicate reports and strengthen surveillance across poison-center, hospital, and public-health settings.

A structured source-level framework linked the main tables and supplementary material to source locators, while preserving separate clinical and exposure denominators, attribution categories, outcome classifications, and potential-overlap assessments. This approach maintained clinically and methodologically important differences between reports rather than collapsing heterogeneous evidence into a single aggregate dataset. Inclusion of multilingual and historical sources broadened the range of evidence represented in the selected corpus, but should not be interpreted as evidence of exhaustive global coverage.

This purposive narrative review was not preregistered. Complete historical search-and-screening documentation, including exact database-specific queries, execution dates, and native result counts, was unavailable; these details are therefore not reported. Subsequent source verification was targeted to specific source-level questions rather than constituting a comprehensive database update or exhaustive citation search.

The threshold of at least 10 cases or exposures introduces size-selection bias and may exclude smaller reports describing rare but severe presentations. Data extraction by one reviewer with checking by a second reviewer is not equivalent to independent duplicate extraction, and no formal risk-of-bias assessment was performed. Language, publication, indexing, and source-access restrictions may also have influenced the selected evidence base.

For some records, assessment was necessarily based on original abstracts or other available source material rather than complete full-text reassessment. Acute-outcome classifications depend on information explicitly available for the relevant clinical denominator and are distinct from later follow-up. Source-attributed deaths were not uniformly supported by individual-level analytical confirmation; historical fatal outcomes with uncertain direct attribution and honey-associated deaths were therefore reported separately.

Potential overlap between reports and the inclusion of sources describing multiple incidents precluded establishment of a verified number of independent patient cohorts. Collectively, these limitations preclude estimation of population-based incidence, pooled mortality, causal attribution for every individual case, or comparative treatment effectiveness.

CONCLUSION

Selected larger reports document diverse exposure settings, recurrent antimuscarinic presentations, high-acuity

events, and substantial source-level variation in exposure attribution and available outcome information. Compatible histories of plant, preparation, or shared-food exposure should raise clinical suspicion, while clusters of compatible illness following shared food should prompt consideration of a common-source toxic exposure and timely public-health assessment. Interpretation of this heterogeneous evidence should preserve source-specific denominators, attribution methods, and confirmation limits rather than combine reports into an assumed common patient cohort. More standardized minimum reporting and linked poisoning registries could improve comparability across future reports and facilitate recognition of potentially overlapping or duplicate reporting.

Declaration of artificial intelligence use

ChatGPT (OpenAI) and Claude (Anthropic) assisted with manuscript preparation, source identification, and data organization and checking. ChatGPT's image-generation tool was used to redraw Figures 1 and 2. The authors retain full responsibility for scientific decisions, interpretation, and the final manuscript.

Ethical approval

This review used only previously published reports. No new participants were recruited and no new human-participant or patient-level data were collected.

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