TR-15 Dangerous traditional remedies: the list

HEALING after the FALL, research library, TR-15

Researched 10 October 2026 by Claude Opus agent for THRIVING after the FALL, Book Four. Library document, unverified.

Findings by section

1. How to read this register

This is the book's single list of traditional remedies and practices that have killed or maimed. Where the library has set out the evidence, this report cites it.

The rate question. Advocates dismiss case reports as rare, and sceptics present them as typical, from the same evidence. A case report shows that a harm can happen, not how often. Where a denominator exists it is given: 447 Callilepis deaths among 21,687 post-mortems in Durban, 18 cancers among 39 Belgian patients, 3,906 cases in one Tajik district (THRIVING library, PH-10, SY-02). Absence of a rate is not proof of rarity, because most herbal harm is never reported, and after the Fall none of it will be.

A grade belongs to a use, a preparation and a dose, not to a plant (THRIVING library, SY-02). Comfrey on the skin and by mouth, kava as a Pacific water drink and as a European extract, ripe and unripe ackee, processed and raw aconite are separate entries. Each entry carries a **harm grade** (A to D), for how good the evidence of harm is, and a **verdict**, in which X means do not use.

Each tradition comes first on its own terms, as the owner instructed on 12 October 2026. Many traditions have their own methods for reducing toxicity. These are named and their record given, without their steps.

The groups follow the organ that fails, because that is how the reader meets them.

2. The ranking: what is most likely to kill after the Fall

Ranked by the death toll in the record and the chance of recurrence in a village that mills its own grain, forages, and has no hospital. The ranking is my judgement on the cited figures [VERIFY: inference].

1. **Delay to care**, when a remedy displaces what the district can still do (section 10).
2. **Weed seed in home-milled grain**: Heliotropium in Afghanistan and Tajikistan, Aristolochia in the Balkans (sections 4 and 5).
3. **Dung, ash or ghee on the cord**, and neonatal tetanus (section 10).
4. **Callilepis and Atractylis**, with hundreds of child deaths (section 8).
5. **Unripe ackee**, in outbreaks where nearly every affected child died (section 8).
6. **Heart poisons**: aconite, oleander, squill, and foxglove taken for comfrey (section 6).
7. **Aristolochia given as medicine** (section 4).
8. **Metals** in remedies and eye powders (section 7).
9. **Infant practices**: enemas, purges, uvulectomy (section 10).

10. **Herbal liver injury** (section 5).
11. **Interactions with salvaged drugs** (section 9).

3. The one-page table

This is the table to print in every plant chapter, and the input to SY-10. "First action" points to the poison protocols in ME-14 and the protocols below. In every case: airway first, nothing by mouth to anyone drowsy or fitting, never induce vomiting, and charcoal only within one hour to someone who can drink it unaided (THRIVING library, ME-14).

Remedy (Latin name, part)	Toxin	Harmful dose	Onset	Signs	Most at risk	Lookalike or confusion	First action	Named cases	Harm grade, verdict
KIDNEY									
Fang ji, mu tong, birthwort (*Aristolochia* spp., root, stem, seed)	Aristolochic acid	Any. Over 200 g in total raised cancer risk	1 to 7 years	Tiredness, swelling, little urine, blood in urine	Everyone	*Stephania* and *Akebia* by shared name, seed in wheat	Stop, check the grain	Belgium 1993, Taiwan, Balkans	A, X
Chaga (*Inonotus obliquus*, fungus)	Oxalate	10 to 15 g powder a day	Months	Little urine, swelling	Kidney disease, vitamin C users	None	Stop, water	Korea 2022	C, X as powder
LIVER									
Comfrey by mouth (*Symphytum* spp., leaf, root)	Pyrrolizidines	No threshold known	Weeks to months	Swollen belly, big liver	Infants, pregnancy	Foxglove	Stop	FDA 2001	B, X. On skin A, 10 days

Remedy (Latin name, part)	Toxin	Harmful dose	Onset	Signs	Most at risk	Lookalike or confusion	First action	Named cases	Harm grade, verdict
Ragwort, bush tea, heliotrope (*Senecio*, *Crotalaria*, *Heliotropium*, plant, seed)	Pyrrolizidine	Daily bread or tea	About 6 weeks	Fluid in belly, liver pain	Children, the old	Weed seed in grain	Change the grain	Afghanistan 1974, Tajikistan 1992, Jamaica 1954	B, X
Kava extract (*Piper methysticum*, root)	Uncertain	Solvent extract, long use	Weeks to months	Jaundice	Drinkers, liver disease	Peelings and stem	Stop	Germany 2002	C, X. Water drink D
Germander (*Teucrium chamaedrys*, aerial parts)	Teucrin A	Capsules	3 to 18 weeks	Jaundice	Slimmers	Other *Teucrium*	Stop for good	France 1992	B, X
Chaparral (*Larrea tridentata*, leaf)	NDGA	0.3 to 6 g a day in capsules	Weeks to months	Jaundice	Capsule users	None	Stop	US 1990s	B, X as capsule
He shou wu (*Polygonum multiflorum*, root)	Idiosyncrati	Even normal doses	About 1 month	Jaundice	Possibly HLA-B*35:01	None	Stop for good	China	B, X
Giloy (*Tinospora cordifolia*, stem)	Unknown	Unknown	Median 46 days	Jaundice	Autoimmune	Other *Tinospora*	Stop	India 2022	C, X

Remedy (Latin name, part)	Toxin	Harmful dose	Onset	Signs	Most at risk	Lookalike or confusion	First action	Named cases	Harm grade, verdict
Ashwagandha (*Withania somnifera*, root)	Unknown	0.5 to 20 g a day	Median 41 days	Jaundice, itch	Liver disease	None	Stop	India 2023	C, B for sleep
Pennyroyal (*Mentha pulegium*, *Hedeoma pulegioides*, leaf, oil)	Pulegone	10 ml of oil, any tea in infants	Hours to days	Vomiting, fits, bleeding	Pregnancy, infants	Sold as a mint	ME-14 Protocol 1	Anderson 1996, Bakerink 1996	B, X
HEART									
Aconite (*Aconitum* spp., root)	Aconitine	0.2 mg poisons, 2 mg kills	10 min to 2 h	Tingling lips, vomiting, irregular pulse	Heart disease	Wild parsnip [VERIFY]	Flat and still	Hong Kong 1992, Chongqing 2018	B, X
Oleander (*Nerium oleander*, *Thevetia peruviana*, leaf, seed)	Cardiac glycosides	Seeds or leaves [VERIFY amount]	Hours	Vomiting, slow or chaotic pulse	Children, self-harm	Garden hedges	Flat and still	Sri Lanka	A, X
Squill (*Drimia* spp., *Bowiea volubilis*, bulb)	Bufadienolides	Unknown	Hours [VERIFY]	As glycosides	Users of blood purifiers	Other bulbs	Flat and still	South Africa	C, X
Foxglove for comfrey (*Digitalis purpurea*, leaf)	Cardiac glycosides	A cup of tea	Hours	Vomiting, yellow vision, slow pulse	Foragers	Comfrey, borage	Flat and still	Washington 1977, Taiwan	B, X

Remedy (Latin name, part)	Toxin	Harmful dose	Onset	Signs	Most at risk	Lookalike or confusion	First action	Named cases	Harm grade, verdict
Ma huang concentrate (*Ephedra sinica*, stem)	Ephedrine	Over 32 mg a day	Hours to days	Palpitations, stroke	High blood pressure	None	Stop, rest	US 1997 to 2004	B, X
METALS									
Bhasma (rasa shastra)	Lead, mercury, arsenic	Weeks of use	Weeks to months	Colic, anaemia, nerve and kidney damage	Pregnancy, children	Sold as herbal	Remove the source	Boston 2004, New York 2011	B, X
Azarcon, greta (lead oxides)	Lead	One course	Days to weeks	Vomiting, fits	Infants	Folk powder	Remove the source	California 1983	B, X
Surma, kohl (lead sulphide)	Lead	Daily use	Months to years	Learning loss, anaemia	Infants	Cosmetic	Remove the source	New York 2024	B, X
METABOLIC									
Unripe ackee (*Blighia sapida*, aril, seed)	Hypoglycin A	Unripe aril, seeds	6 to 48 h	Vomiting, fits, coma	Children 2 to 10, malnourished	Pod opened by hand	Sugar	Jamaica, Burkina Faso, Haiti	B, X if unripe
Impila (*Callilepis laureola*, tuber)	Atractyloside	One dose	Hours to days	Low sugar, coma, jaundice	Children	Other tubers	Sugar	Durban	B, X
Glue thistle (*Atractylis gummifera*, root)	Atractyloside	As chewed root	Hours	Low sugar, coma, jaundice	Children	Wild artichoke	Sugar	Morocco	B, X
INTERACTIONS									

Remedy (Latin name, part)	Toxin	Harmful dose	Onset	Signs	Most at risk	Lookalike or confusion	First action	Named cases	Harm grade, verdict
St John's wort (*Hypericum perforatum*, flowering tops)	Enzyme induction	300 mg three times a day	1 to 2 weeks	The other drug fails	Users of salvaged drugs	Other *Hypericum*	Stop, watch the other drug	Ruschitzka 2000, Piscitelli 2000	A, X with listed drugs
PRACTICES									
Infant enema or purge	Caustics, fluid loss	One	Hours	Bloody stool, no wet nappy	Under 3 months	*Senecio* in the purge	ORS, send	KwaZulu-Natal	B, X
Uvulectomy	Bleeding, infection	One cut	Hours to days	Bleeding, fever	Infants	None	Pressure, send	Ethiopia	B, X
Cautery, branding	Burn sepsis, delay	One brand	Days	Infected burn	Children	None	Clean, treat the illness	Pakistan 2009, India	B, X
Shared-blade cuts	Hepatitis B, HIV	One blade	Months to years	Late jaundice	Everyone cut	None	One boiled blade each	Cameroon	B, X
Dung or ghee on the cord	Tetanus	One application	Days 3 to 28	Stops feeding, stiff jaw	Newborns	None	Clean, dry cord	Punjab, Karachi	B, X
Genital cutting [OWNER]	Bleeding, obstetric injury	One	Now and lifelong	Bleeding, obstructed labour	Girls, women	None	Pressure, send	WHO 2006	B, [OWNER]
Harmful exorcism [OWNER]	Starvation, violence, missed illness	Days	Days	Wasting, injury	Children, epilepsy	None	Protect, feed, treat	Klingenberg 1976, London 2010	B, [OWNER]
Delay to care	The disease itself	Days	Varies	Red flags	Children, labouring women	None	Send the same day	US cancer cohort	B, X

4. Kidney

Aristolochia. Birthwort was a medicine of childbirth in Europe, snakeroot in North America, and fang ji and mu tong in Chinese medicine, where the harm arose from shared names. Aristolochia fangchi was dispensed as guang

fang ji in place of Stephania tetrandra, and A. manshuriensis as guan mu tong in place of Akebia (THRIVING library, PH-08, TR-03). In Brussels in 1993 Vanherweghem described nine women with rapidly progressive kidney fibrosis after a slimming regimen. By 1994 there were 71 cases, 35 on dialysis or transplanted. Nortier found urothelial cancer in 18 of 39 patients, and a cumulative dose over 200 g raised the risk (THRIVING library, SY-02). In Taiwan, where over a third of the population was prescribed these herbs from 1997 to 2003, patients with end-stage kidney disease had standardised incidence ratios of 11.6 for upper tract cancer and 13.9 for bladder cancer (THRIVING library, TR-03). Grollman's group found aristolactam DNA adducts in Balkan patients and not in other kidney disease, and 89 per cent of 19 TP53 substitutions were at A:T pairs, 78 per cent of those A:T to T:A, the toxin's fingerprint (Grollman 2007). The Balkan source was A. clematitis seed in home-milled wheat (THRIVING library, TR-03). IARC classed it as Group 1 in 2002, and Taiwan, Hong Kong and the EU banned the herbs in 2003 and 2004 (THRIVING library, PH-08).

Kidney failure follows high intake by one to seven years, and cancer mostly within about three years more (THRIVING library, TR-03). The signs are tiredness, pallor, swollen ankles, less urine, and later blood in the urine. There is no antidote. The flower is a pipe-shaped tube, and the dangerous lookalike after the Fall is the seed in grain. Harm grade A. Verdict X in every form.

Chaga. Inonotus obliquus, a black growth on birch, is drunk as a dilute tea in Russian, Finnish and Korean folk practice. The harm comes from daily powders. A 69-year-old Korean man took 10 to 15 g a day for three months with 500 mg of vitamin C. His eGFR fell to 7.9, and he needed haemodialysis before recovering at about a month (Kwon 2022). Another Korean patient reached end-stage failure, and the mushroom held 14.2 g of oxalate per 100 g (Lee 2020, secondary summary). A Japanese case was reported in 2014 (Kikuchi 2014, title only). Oxalate crystals block the kidney, worst in people with kidney disease or taking vitamin C. Harm grade C. Verdict X as daily powder. A weak, occasional tea has no record of harm or of benefit [VERIFY: inference].

5. Liver

Herbal liver injury is common enough to measure. In the US Drug-Induced Liver Injury Network, 15.5 per cent of cases came from supplements (Navarro 2014, via THRIVING library, SY-02). In China the figure was 26.81 per cent, with Polygonum multiflorum the commonest single agent (Shen 2019, via THRIVING library, TR-03). Stickel and Shouval list kava, germander, Chinese mixtures and branded slimming products as repeat offenders, and note that most such injury is idiosyncratic rather than dose-related (Stickel and Shouval 2015, abstract). The pattern repeats: injury four weeks to four months after starting, recovery in most people on stopping, and a faster, worse relapse on restarting.

Pyrrolizidine alkaloids. Hundreds of species make them, in the borage family (Symphytum), the daisy family (Senecio, ragwort), the pea family (Crotalaria) and Heliotropium. They block the small veins of the liver, causing veno-occlusive disease. The liver swells and aches, fluid fills the belly, jaundice comes late, and survivors may develop cirrhosis.

Comfrey is knitbone, laid on sprains, bruises and fractures across Europe for centuries, and also drunk and eaten. On intact skin it is grade A, within the EMA limit of 10 days and 0.35 μg of alkaloid a day (THRIVING library, PH-01). By mouth it is X. PH-10 records veno-occlusive disease after comfrey tea, and the FDA advised withdrawal of oral products in July 2001 (THRIVING library, PH-10). I found no established safe oral threshold [VERIFY]. Its lookalike is foxglove (section 6).

In Jamaica in 1954, Bras, Jelliffe and Stuart described children of about two to five, given Crotalaria bush teas for colds and fevers, with huge fluid-filled bellies and enlarged livers, many going on to cirrhosis (Bras 1954, secondary summary). The grain epidemics are the warning for this book. In Gulran, western Afghanistan, from 1974 to 1976, wheat with Heliotropium seed after a drought affected about 7,800 people and killed about 1,600, and outbreaks recurred in 1999 to 2001 and 2007 to 2008 (Mohabbat 1976 via Kakar 2010, THRIVING library, SY-02). In Farkhar,

Tajikistan, during the blockade of 1992, Heliotropium seed in wheat gave 3,906 cases by March 1993, an attack rate of 4 per cent. Case fatality was 1.3 per cent, rising with age to 5.9 per cent, and liver signs appeared about six weeks after people began eating the bread (Epicentre 1993). Both followed drought or blockade, when no one could afford to throw grain away. In southern Africa a toxic Senecio was given in an infant purge in place of S. coronatus (van Schalkwyk 2021, via THRIVING library, PH-06). Harm grade B. Verdict X for all oral use.

Kava. Piper methysticum is the social and ceremonial drink of Fiji, Tonga, Samoa, Vanuatu and much of Oceania. The root is pounded with water and shared from one bowl to welcome guests, settle disputes and mark occasions. Ceremonial forms held under restriction are not described here. The Pacific water drink has produced no recognised epidemic of liver failure. The harms came from European tablets of acetone or ethanol extracts taken for anxiety, and Germany banned kava in 2002 with about 24 German and Swiss reports in hand. WHO found that most cases involved solvent extracts but five involved water preparations, and placed the risk on overdose, long use, co-medication and poor raw material, with peelings and stem in place of peeled root (WHO 2007, THRIVING library, SY-02). Teschke's reassessment of 26 cases on the CIOMS scale kept one as highly probable and two as probable, and excluded fifteen (Teschke 2008, secondary summary). Ernst counted about 70 reports (Ernst 2007, secondary summary). German courts later lifted the ban [VERIFY: 2014 or 2015]. Harm grade C. Verdict X for extracts. The water drink of peeled root is grade D for harm, unproven either way, and should not be combined with alcohol or given in liver disease [VERIFY: inference].

Germander. Teucrium chamaedrys, a European bitter tonic, was sold in France in the 1980s as slimming capsules. Larrey described seven patients with hepatitis 3 to 18 weeks after starting, recovery in 1.5 to 6 months, and relapse in three on rechallenge (Larrey 1992, abstract). French pharmacovigilance received 26 reports (Castot and Larrey 1992, secondary summary), and France banned germander in April 1992. The liver turns teucrin A, a furano neo-clerodane diterpenoid, into a reactive epoxide. Harm grade B. Verdict X.

Chaparral. Larrea tridentata, creosote bush, is drunk as a tea in the south-western deserts of North America [VERIFY: which peoples, source not reached]. The US harms came from capsules of ground leaf. The National Academies review found 15 cases, 9 well documented, with one transplant (with confounders), no deaths and one positive rechallenge, at 0.3 to 6 g a day. Only one case followed tea and 11 followed capsules, and NDGA, about 10 per cent of the dry leaf, dissolves poorly in water (National Academies 2005, Sheikh 1997). Harm grade B. Verdict X for capsules, D for occasional tea.

Polygonum multiflorum. He shou wu is a Chinese tonic for the blood, the hair and old age. Liu's review tabulates about 590 patients with nine deaths and two transplants. Onset was about a month after starting, and some were injured at normal doses or after a single dose. The pharmacopoeia dose is 3 to 6 g raw and 3 to 12 g processed (Liu 2019). HLA-B*35:01 may mark those at risk (Li 2019, cited in Liu 2019) [VERIFY: effect size]. Harm grade B. Verdict X.

Tinospora and ashwagandha. Both are Ayurvedic tonics. Kulkarni collected 43 Indian patients with liver injury after Tinospora cordifolia, median latency 46 days, two deaths. Withania somnifera has caused liver injury after a median of 41 days at 500 mg to 20 g a day, with three deaths, all in existing liver disease (THRIVING library, PH-07). Ashwagandha stays grade B for sleep and stress at 300 to 600 mg of extract a day (THRIVING library, TR-02), so its verdict is conditional: never in liver disease, and stop at the first jaundice or itch. Tinospora is X pending better data. Harm grade C for both.

Pennyroyal. Mentha pulegium in Europe and Hedeoma pulegioides in North America were taken to bring on a late period or end a pregnancy. The oil is 80 to 90 per cent pulegone in European material and 16 to 30 per cent in American, and the liver turns pulegone into menthofuran (THRIVING library, ME-02). Anderson reviewed 18 earlier cases. Ten millilitres or more of oil caused moderate to severe toxicity, some patients died within one to two hours of about 15 ml, and most were women seeking an abortion (Anderson 1996, secondary summary, THRIVING library, SY-02, ME-02). Bakerink described two infants given home mint teas that contained pennyroyal. An eight-

week-old died of liver failure after 120 ml, and a six-month-old survived with epileptic encephalopathy (Bakerink 1996, summary). The signs are vomiting and drowsiness within hours of the oil, then fits, bleeding and liver and kidney failure over one to three days. Harm grade B. Verdict X for oil at any dose and for any pennyroyal tea in infants or pregnancy.

6. Heart

Aconite. In Chinese medicine the processed roots of Aconitum carmichaelii, fuzi and chuanwu, are central warming drugs, and the tradition has always called them poisons that must be processed first. The processing, paozhi, is named here and not described. It works: proper processing cut the diester alkaloids 40 to 80 fold. Aconitine poisons at about 0.2 mg and kills at about 2 mg (THRIVING library, TR-03). Within ten minutes to two hours come tingling of the lips, tongue and fingers, then vomiting, faintness and an irregular pulse (THRIVING library, ME-14). In Hong Kong in 1992 an aconite tea put 17 people in hospital and killed 2. Of 52 later confirmed cases, a third came from doses above the recommendation, a third from herb dispensed without the patient's knowledge, and 13.5 per cent from poor processing. Aconite liquor in Chongqing in 2018 made 15 ill and killed 5 (THRIVING library, TR-03, PH-08). In Europe monkshood, A. napellus, is a foraging error, and the one death among 2,197 Marseille food confusions was aconite (THRIVING library, PH-10). With supportive care, 1.1 per cent of 179 Hong Kong episodes died (THRIVING library, ME-14). Harm grade B. Verdict X after the Fall, because neither processing nor dose can be checked.

Oleander and yellow oleander. The leaves and seeds of Nerium oleander and Thevetia peruviana hold cardiac glycosides. Yellow oleander seed is a common means of self-poisoning in Sri Lanka, with 415 cases in the Anuradhapura series (THRIVING library, ME-07). Digoxin Fab resolved serious arrhythmia at two hours in 15 of 34 patients against 2 of 32 on saline, and deaths rose about threefold when Fab ran out (THRIVING library, ME-14, PH-07). Yet 289 oleander confusions in Marseille caused no death (THRIVING library, PH-10). The dose decides. Harm grade A. Verdict X.

Squill. Drimia (Urginea) maritima, the Mediterranean sea onion, was a classical expectorant and diuretic, given as oxymel of squill, and red squill was a rat poison (THRIVING library, ME-01). Its bufadienolides act like cardiac glycosides. In South Africa traditional healers use the related Drimia sanguinea (sekanama, slangkop) and Bowiea volubilis (climbing potato) as blood purifiers and for headache, oedema, infertility and bladder complaints, and both have caused human poisoning. Diagnosis rests on the history and on unexplained arrhythmia, and the history is hard to get because the contents of remedies are often kept secret (Van der Bijl 2012). I found no case count. Harm grade C. Verdict X.

Foxglove for comfrey. Before flowering, Digitalis purpurea leaves look like comfrey or borage. A Washington State couple were poisoned by such a tea in 1977 (CDC 1977, via THRIVING library, SY-02), and in a Taiwanese cluster of nine a 55-year-old woman died on day seven despite Fab (THRIVING library, PH-10). Harm grade B. Verdict X for any comfrey-like leaf not seen in flower.

Ephedra. Ma huang, Ephedra sinica, is an old Chinese remedy for wheeze and chills, used in small amounts within formulae. The harm came from American slimming and sports concentrates. Haller and Benowitz judged 31 per cent of 140 FDA reports definitely or probably related, with 10 deaths and 13 permanent disabilities (THRIVING library, SY-02). Over 32 mg a day carried 3.5 times the risk of haemorrhagic stroke (Morgenstern 2003, via THRIVING library, ME-07). The US ban took effect on 12 April 2004. Harm grade B. Verdict X for concentrates.

For all of them there is no village antidote. Lay the patient flat, keep them warm and still, give nothing by mouth and no extra potassium, and stay with them. Aconitine and the glycosides are heat-stable, so cooking does not make them safe (THRIVING library, ME-14).

7. Metals

Rasa shastra. The branch of Ayurveda that prepares metals, minerals and gems as bhasma, calcined ashes, through purification, shodhana, and incineration, marana, holds that these steps turn a poison into a medicine, and it has its own tests of a finished bhasma (THRIVING library, TR-02). The methods are named and not described. The record is that the products contain the metals. Saper found metals in 14 of 70 Ayurvedic products bought in Boston in 2003, with lead at a median of 40 µg/g and up to 37,000, mercury up to 104,000 and arsenic up to 8,130 (THRIVING library, TR-02). In 2008, 20.7 per cent of 193 products bought online held metals, about 40 per cent of rasa shastra products against 17 per cent of herbal-only ones, and several rasa shastra medicines would give lead or mercury intakes three to four orders of magnitude above US limits (Saper 2008, via Boston University summary). In New York in 2011 to 2012 six pregnant women had blood lead of 16 to 64 µg/dl from Ayurvedic medicines, and two miscarried (THRIVING library, TR-02). Lead gives colic, constipation, anaemia, wrist drop and, in children, loss of learning and fits. Mercury injures the kidney. Harm grade B. Verdict X. TR-02 forbids any metal, mineral or gem preparation at any rung, and this report agrees.

Azarcon and greta. In Mexican and Mexican-American households, empacho, food stuck to the stomach wall, is treated by massage and bright powders. Azarcon is lead tetroxide and greta lead oxide, 70 to over 90 per cent lead. In California from 1981 to 1983 a 15-month-old had a blood lead of 124 µg/dl, and a three-year-old sibling died with seizures. Seven of 100 migrant children had been given the powders, and 7.2 to 12.1 per cent of 545 Los Angeles households had used them (CDC 1983). Harm grade B. Verdict X.

Surma and kohl. Eye powders put on infants and adults across South Asia, the Middle East and North Africa, for beauty, to protect the eyes and against the evil eye, are often galena, lead sulphide. In a New York family exposed from 2012 to 2023, one surma held 390,000 ppm of lead and other samples up to 980,000 ppm, that is 98 per cent. A child's blood lead rose from 14 µg/dl at birth to 30 and took about five years to fall below 5 (Hore 2024). In a meta-analysis of seven studies and 1,239 children, kohl users had 3.64 times the odds of raised blood lead, with marked heterogeneity (Sadeq 2021). Harm grade B. Verdict X for lead-based powders. Lead-free kohl has no record of harm in the sources read [VERIFY].

For every metal remedy, find the source and remove it from the patient and the siblings. In the TLC trial, succimer lowered children's blood lead without improving cognition (THRIVING library, ME-14). For a village, the source is the medicine.

8. Metabolic: the poisons that steal sugar

Ackee. Blighia sapida came to Jamaica from West Africa, and ackee and saltfish is the national dish. The tradition's safety rule is exact: eat it only when the pod has opened on the tree, eat only the cream aril, and throw away the seeds, the pink membrane and the cooking water. The naturally opened ripe aril is safe, while unripe fruit holds about 100 times as much hypoglycin A (Katibi 2015). The FDA puts unripe aril at about 1,000 ppm, notes that the seeds and husk stay toxic, and rejects imports over 100 ppm (FDA 2024). Hypoglycin A blocks the burning of fat for fuel, and blood sugar falls. Vomiting starts 6 to 48 hours after the meal, then come drowsiness, fits and coma (Katibi 2015). In St Ann, Jamaica, from 1989 to 1991, 38 people fell ill and 8 died, with vomiting in 77 per cent, coma in 26 and seizures in 24. Children of 2 to 10 and the malnourished were most at risk (CDC 1992). In Bobo-Dioulasso, Burkina Faso, from January to May 1998, all 29 affected children died within 2 to 48 hours, and an ackee tree within 100 m of the home raised the odds 5.1 times (Meda 1999, abstract). In Haiti over 100 cases followed from November 2000 (Joskow 2006, abstract), and a secondary figure of 36 deaths among 60 I could not confirm [VERIFY]. In Nigeria eight siblings ate unripe fruit, and the one who ate six seeds died (Katibi 2015). Harm grade B. Verdict X for unripe fruit and seeds.

Callilepis laureola, impila. Among the Zulu of KwaZulu-Natal the tuber is given as a tonic, an enema and a protective medicine, often to children, and its name means health (THRIVING library, TR-07). Its atractyloside blocks

the mitochondrial ADP/ATP carrier, so cells starve, sugar falls, and the liver and kidney die. At King Edward VIII Hospital, Durban, 447 deaths from acute liver necrosis were found among 21,687 post-mortems over 20 years, 263 in the impila pattern (THRIVING library, PH-10), and Watson described 50 children (THRIVING library, PH-06). Within hours to days come vomiting, belly pain, drowsiness, low sugar and fits, then jaundice and little urine. Harm grade B. Verdict X.

Atractylis gummifera. In Morocco, Algeria and Tunisia the glue thistle has been used as a medicine and an abortifacient, and children chew its root for the gum. It holds atractyloside and carboxyatractyloside and is confused with wild artichoke. The Moroccan poison centre recorded 240 hospitalised patients from 1981 to 2004, 72 per cent under 16, with 98 deaths. Over 1981 to 2009 there were 467 cases, 63.4 per cent children, with mortality of 39.2 per cent, and coma, hepatitis and rural residence predicted death (Achour 2013, search summaries only) [VERIFY: primary paper not read]. Harm grade B. Verdict X, and children should be taught it as a poison.

Treatment for all three is sugar. Low sugar kills before the liver does, and repeated sugar buys time for the poison to wear off (Protocol 3). In Mali, Graz and colleagues placed a level teaspoon of moistened sugar, about 2.5 g, under the tongue of children under 15 kg, and a heaped one, about 3.5 g, for heavier children, every 20 minutes. It raised glucose about as well as a drip, and failed when the child swallowed it or clenched the teeth (Graz 2008). A WHO bulletin commentary names sugar under the tongue as the recommended option where a drip is unavailable (Hildenwall 2021). The diabetes guideline gives about 0.3 g per kg by mouth to a conscious child, rechecked at 15 minutes (ISPAD 2022, secondary summary). The sources differ. Graz's mean first dose was 0.25 g per kg against a recommended 0.5, and they suggest dosing every 10 minutes to prevent relapse. The book should take the larger, more frequent dose, since extra sugar does no harm here and too little does [VERIFY: inference].

9. Interactions: St John's wort and salvaged drugs

Hypericum perforatum was hung over doors on Midsummer's Eve against evil spirits and taken for melancholy and wounds, and standardised extracts are grade A for mild to moderate depression (THRIVING library, PH-01). Its harm is interference. It induces the liver enzyme CYP3A4 and the gut pump P-glycoprotein, so other drugs are cleared faster and fail. At 300 mg three times a day for 14 days in eight volunteers, indinavir exposure fell by 57 per cent and its trough by 81 per cent, with individual falls of 49 to 99 per cent (Piscitelli 2000). Two Zurich heart transplant patients, aged 61 and 63, developed biopsy-proven rejection, with cyclosporin down to 95 μg/l (Ruschitzka 2000). Medsafe listed strong interactions with protease inhibitors, cyclosporin and tacrolimus, moderate ones with warfarin, digoxin and SSRIs, and serotonergic effects with antidepressants (Medsafe 2000). With a low-dose pill, intermenstrual bleeding rose from 35 per cent to 77 to 88 per cent (Pfrunder 2003), and unwanted pregnancies were reported (Schwarz 2003, abstract). I found no well-documented serotonin syndrome case [VERIFY]. Induction builds over one to two weeks and fades as slowly, so stopping the herb can push warfarin or digoxin levels up [VERIFY: offset time]. Harm grade A for the pharmacology and B for clinical harm. Verdict X with any antiretroviral, transplant drug, contraceptive pill, anticoagulant, digoxin, anticonvulsant or antidepressant.

Liquorice belongs here too. Above about 100 mg of glycyrrhizin a day it raises blood pressure and lowers potassium, which can make digoxin toxic [VERIFY: inference], and over 80 per cent of people over 60 taking 6 g a day for more than 30 days were affected (THRIVING library, PH-08).

10. Practices

These harms come from what is done, not from a plant. Two are left for the owner's stance.

Infant enemas and purges. In Zulu, Xhosa and other southern African traditions the infant is cleansed of isiqoni and of pollution by enemas and purges (THRIVING library, TR-07). In one KwaZulu-Natal study 89 per cent of babies under three months had been given an enema. A caustic enema destroyed one child's rectum and colon (Mshumpela 2020, via THRIVING library, PH-06). The harms are dehydration, chemical burns and the plant poi-

sons of sections 5 and 8. Signs: bloody stool, a swollen belly, no wet nappy for six hours, sunken eyes. Harm grade B. Verdict X.

Uvulectomy. In Ethiopia and elsewhere in Africa the uvula is cut, often in infancy, to prevent throat infection, cough, vomiting and failure to thrive. An Ethiopian meta-analysis of 19 studies and 23,559 people found complications in 29 per cent, and an African review of 11 studies and 7,231 children found a prevalence of 40.98 per cent and linked reused blades to HIV and hepatitis B (THRIVING library, TR-07, PH-06). Bleeding, sepsis, anaemia and a missed cause of the cough follow. Harm grade B. Verdict X.

Cautery. Al-kaiy, cautery with a hot iron, is a respected last remedy in Arab and wider Islamic folk medicine, and in India children are branded for pneumonia, convulsions and jaundice. Of four branded Pakistani adults, two died, and in one rural Indian catchment 20 of 144 children under five had been branded (Shah 2009 and others, via THRIVING library, TR-04). The harm is the infected burn and the missed disease. Harm grade B. Verdict X.

Scarification with shared blades. Cuts that mark belonging and carry medicine into the body are made by many West, Central and southern African peoples. The cut is not the harm. The shared blade is. In Buea, Cameroon, traditional operations or scarification raised the adjusted odds of hepatitis B 2.87 times (Tazinkeng 2022, via THRIVING library, TR-07). Harm grade B. Verdict X for shared or unboiled blades. A new or boiled blade for each person removes most of the risk.

Dung, ash and ghee on the cord. In South Asia and parts of Africa families put dung, ash, mud, oil or ghee on the cut cord to dry, heal or protect it. Tetanus spores live in soil and dung. In the Punjab dung or ash was hazardous and an antimicrobial was protective, odds ratio 0.2 (Bennett 1997, abstract). Home-made ghee was a risk (Traverso 1991, abstract), and in Karachi any cord application raised the adjusted odds 5.1 times (Raza 2004). Tetanus begins on days 3 to 28: the baby stops feeding, the jaw stiffens, and spasms follow. Deaths fell from 46,898 in 2000 to 7,700 in 2021 (WHO 2024). Chlorhexidine on the cord lowered neonatal death, RR 0.77 (THRIVING library, MA-01). Harm grade B. Verdict X.

Labour herbs and cuts. In Durban, women who took herbs in labour had meconium in 55.6 per cent against 15 per cent (Mabina 1997). In Mchinji, Malawi, among 8,219 births, labour-hastening herbs raised the adjusted odds of maternal complications to 1.28 (Zamawe 2018), both via THRIVING library, TR-07. In Hausa-speaking northern Nigeria and Niger, gishiri and gurya cuts are given for obstructed labour, and at Danja in Niger 10 of 360 fistulas followed a gurya cut (Ouedraogo 2018, via THRIVING library, TR-07). Harm grade B. Verdict X.

Initiation. Among the amaXhosa and other peoples of the Eastern Cape, initiation, ulwaluko, is restricted and not described here. From 2006 to 2014, among more than 400,000 initiates, 532 died and 233 lost the penis, from dehydration, sepsis, gangrene and other causes, with dehydration from withheld water the most preventable (THRIVING library, TR-07). These harms can be prevented without entering the lodge: water, a clean blade, and a way to bring a sick initiate out. Harm grade B. Verdict X for water restriction and unclean blades.

Female genital cutting [OWNER]. The facts. More than 230 million girls and women alive have been cut, and more than 4 million girls are at risk each year, mostly from infancy to age 15. WHO describes four types and finds no health benefit. Immediate harms are pain, haemorrhage, shock, infection, tetanus, urinary retention and death. Long-term harms include painful sex, cysts, infection and obstetric complications (WHO 2025). Among 28,393 women at 28 centres in six African countries, stillbirth or early neonatal death was raised by relative risks of 1.15, 1.32 and 1.55 for types I, II and III, and postpartum haemorrhage 1.69 times for type III, about one to two extra perinatal deaths per 100 deliveries. These were hospital births, so the risk at home may be higher (WHO Study Group 2006). Harm grade B. Stance [OWNER].

Exorcism [OWNER]. The facts. In many traditions illness, fits or strange behaviour may be read as possession. Most rites to cast out the spirit are prayer and harm no one. Deaths follow fasting, restraint, beating, drowning or withheld medicine. Anneliese Michel, a German woman with epilepsy and psychiatric illness, died at Klingenberg on

1 July 1976 weighing about 30 kg, after about 65 to 67 rites over ten months. Her parents and two priests were convicted of negligent homicide in 1978 (Wikipedia, Anneliese Michel). Kristy Bamu, 15, accused of kindoki, witchcraft, was tortured and drowned in Newham, east London, on Christmas Day 2010, and his sister and her partner were convicted of murder in 2012. Scotland Yard reported 83 investigations of faith-based abuse in ten years (Channel 4 News 2012). Witchcraft accusations against children and killings of people with albinism are documented in Africa (THRIVING library, TR-07). The commonest medical harm is a missed epilepsy, psychosis, delirium or childhood fever. Harm grade B. Stance [OWNER].

Delay to care. The largest harm is what a remedy displaces. Cancer patients who chose alternative medicine alone had 2.5 times the risk of death, and more than 330,000 South African lives were estimated lost while the state promoted garlic, beetroot and lemon over antiretrovirals (THRIVING library, SY-02). After the Fall the hospital comparison fails, but the red flags here and in ME-14 mark what the district can still treat if the patient comes in time. Harm grade B. Verdict X for any remedy given in place of a red-flag referral.

Evidence grades

The table in section 3 grades every entry. In summary:

Harm grade	Entries	Basis
A	Aristolochia, St John's wort interactions, cardiac glycoside plants	Cohorts with a molecular signature, pharmacokinetic trials and RCT, Fab RCT
B	Pyrrolizidines, germander, chaparral capsules, Polygonum, pennyroyal, aconite, foxglove for comfrey, ephedra, metals, ackee, Callilepis, Atractylis, all practices	Consistent series, outbreaks, case-control studies, rechallenge
C	Kava extracts, Tinospora, ashwagandha, squill, chaga	Reports with plausible pharmacology, contested causality
D	Kava water drink, chaparral tea, chaga tea	No signal, no study

Verdicts: X for every entry in its harmful form. Conditional exceptions: comfrey on intact skin for up to 10 days (A for benefit), ashwagandha extract outside liver disease (B), ripe self-opened ackee aril (safe food). Salt emesis and the universal antidote, X (THRIVING library, ME-14).

Means ledger

Rung	What it can do	What it changes
Hands and knowledge	Know the table. Ask what else was given. Recognise tingling lips, low sugar, yellow eyes, a swelling belly. Lie the cardiac patient flat. Breathe for the patient (ME-14)	Prevents most harms, which are misidentification, overdose and the wrong practice

Rung	What it can do	What it changes
Hearth	Sugar under the tongue. Oral rehydration solution. A boiled blade. A clean, dry cord. Throw away unripe ackee and seeds	Treats the sugar poisons and enema dehydration, prevents tetanus and blade infection
Garden and still	Remove Aristolochia, oleander, Gloriosa, Abrus and squill from house gardens. Label safe plants. Pick over grain by hand. Weigh doses on a scale	Removes the source and fixes the dose
Village dispensary (300)	A lay healer who keeps a register of remedies taken. Salvaged charcoal. A microscope for urine [VERIFY: value for crystals]	Earlier recognition, and records that reveal clusters
District infirmary (3,000)	A nurse or doctor, glucose and fluids by drip if salvaged, a sterile room for burns, a lab bench	Rescues severe low sugar, burns and sepsis, and detects grain epidemics early
Hospital before the Fall	Liver and kidney tests, dialysis, digoxin Fab, chelation, transplant, blood lead	Saves some kidney and liver failure and most glycoside poisoning

The top rungs cure little on this list. Dialysis does not reverse aristolochic acid nephropathy and chelation did not restore cognition. The lower rungs prevent.

Harm test

How it kills or maims. Five ways recur: the wrong plant (foxglove for comfrey, Senecio for S. coronatus, Aristolochia for Stephania), the wrong part or stage (unripe ackee, raw aconite), the wrong preparation (kava extract, chaparral capsules, chaga powder), the wrong person, and contamination (weed seed in grain, metals in bhasma, steroids in jamu). Ko found 32 per cent of 260 patent medicines adulterated (THRIVING library, TR-03), and steroid-laced jamu caused Cushing's syndrome (THRIVING library, PH-07).

The dose or error that harms. Aristolochia, any. Aconitine, 0.2 mg poisons and 2 mg kills. Pennyroyal oil, 10 ml. Ephedra, over 32 mg a day. Ackee, unripe fruit or seeds. St John's wort, ordinary doses. Pyrrolizidines and metals, daily use for weeks.

Who must never receive them. Infants and children under five, pregnant and breastfeeding women, anyone with liver or kidney disease, anyone on the salvaged drugs in section 9, the old, and the dehydrated or malnourished (CDC 1992).

Misidentification. Comfrey and foxglove, wild artichoke and Atractylis, mints and pennyroyal, Gloriosa tubers and yams (THRIVING library, PH-07), monkshood and wild parsnip [VERIFY], weed seed and grain.

Signs that it is going wrong, and what to do. Tingling lips, vomiting and an irregular pulse within two hours: a heart poison, Protocol 4. A child vomiting, then drowsy or fitting within two days of a fruit, tonic or enema: low sugar, Protocol 3. Yellow eyes, dark urine, itch or a swelling belly weeks after a tonic: liver, Protocol 2. Less urine and swelling: kidney, Protocol 2. A newborn who stops feeding: tetanus. A dull, anaemic child with belly pain: lead, Protocol 5. In every case stop the remedy, keep a sample, follow ME-14 Protocol 1, and never restart a herb that caused jaundice.

Historical cases of harm. In the table and sections 4 to 10.

Red flags

1. **A child who vomits, then becomes drowsy or fits, within two days of a fruit, tonic or enema.** Probably low sugar. Sugar under the tongue at once and every 10 to 20 minutes, on their side. Honest comfort: sugar is what the hospital would give first.
2. **Tingling lips, vomiting and an irregular pulse after a root, tea or liquor.** Aconite or a glycoside. The cure is a drug the village lacks. Lie flat, keep still and warm, stay with them. Many who survive the first hours recover.
3. **Jaundice with confusion, bruising or bleeding after a herb.** Liver failure, which without transplant often kills. Stop every remedy, give sugar and fluids by mouth, keep them comfortable, and tell the family plainly.
4. **A newborn who will not feed and stiffens.** Neonatal tetanus, which without a hospital usually kills. A dark, quiet place, expressed milk by spoon if they can swallow, and a clean cord for the next baby.
5. **Little or no urine and swelling after a herb.** Kidney failure. Stop the remedy, give measured water and no salt, and say honestly that it may not recover.
6. **Swelling bellies in several people after a drought.** Pyrrolizidine in the grain. These patients may not recover, but the next cases can be stopped by changing the grain at once.
7. **A girl or initiate bleeding or feverish after a cut [OWNER for FGM].** Pressure, fluids, a clean wound, and send.

The case against

Against the remedies. Edzard Ernst has argued for two decades that herbal harms are under-reported and benefits over-stated, and his group's overview of 50 herbs found serious harms for several (Posadzki 2013, via THRIVING library, SY-02). Robert Saper showed that metals in Ayurvedic products are routine, not rare. Jean-Louis Vanherweghem, Joëlle Nortier and Arthur Grollman showed that a herb with a respectable history caused cancer, its toxicity hidden by a naming tradition. Christine Haller and Neal Benowitz showed that a natural product could kill young adults. On their view the safest pharmacopoeia is short, and this register should be longer than the list of recommended plants (THRIVING library, SY-02).

Against the register itself. Rolf Teschke argued, with kava as the example, that regulators counted cases that did not survive causality assessment, and that banning a whole plant punished Pacific growers for a European extract (Teschke 2008). The chaparral review makes the same point: the tea is not the capsule (National Academies 2005). AYUSH and Harshad Devarbhavi call the Indian liver series retrospective and loose (THRIVING library, PH-07). Aconite's processing does work, and supportive care gave 1.1 per cent mortality in Hong Kong, so its X rests on the loss of any check on processing and dose after the Fall, not on the tradition being wrong (THRIVING library, TR-03, ME-14). The book's answer is to grade the use, the preparation and the dose, not the plant.

Against both romances. Old does not mean safe: impila, the enema and dung on the cord are old. But modern products caused many of these harms (solvent extracts, capsules, slimming supplements), and several traditions had working safety rules: the ackee that opens on the tree, the processing of aconite, the water preparation of kava. Dialysis, Fab and transplant will not exist. Recognition, sugar and a clean blade will.

Today and after the Fall. Today the harms of metals and supplements come mostly through trade. After the Fall imported products fade, while foraging errors, grain contamination, infant practices and home-made concentrates rise [VERIFY: inference].

10-line summary

1. Aristolochic acid in any form destroys kidneys and causes urothelial cancer, and its seed in home-milled wheat did so with no healer involved.
2. Pyrrolizidine weed seed in grain killed about 1,600 in Afghanistan and caused 3,906 cases in Tajikistan, both after drought or blockade.
3. Unripe ackee, Callilepis and Atractylis kill children through low sugar within hours to two days, and sugar is the treatment.
4. Aconite, oleander, squill and foxglove kill through the heart within hours, survive cooking, and have no village antidote.
5. Herbal liver injury appears weeks to months after starting, mostly recovers on stopping, and returns on restarting.
6. The kava and chaparral harms came from extracts and capsules, not from the traditional water preparations.
7. Metal remedies and eye powders poison through lead, and the treatment is removing the source for the whole family.
8. St John's wort makes antiretrovirals, transplant drugs and contraceptives fail.
9. Dung on the cord, infant enemas, uvulectomy, cautery and shared blades kill and maim on the record.
10. The largest harm is delay: a remedy that keeps a patient from what the district can still do.

Open questions

- Is there any oral dose of comfrey, or of any pyrrolizidine plant, below which harm does not occur? No human threshold was found.
- Is the Pacific water drink of peeled kava root safe for the liver, or merely unreported?
- What share of Atractylis and Callilepis deaths would sugar alone prevent?
- How often does St John's wort cause serotonin syndrome with salvaged antidepressants?
- What was the true death toll in the Haiti ackee outbreak?
- Is any chaga dose safe for healthy kidneys?
- How large is the HLA-B*35:01 effect in Polygonum multiflorum injury?
- How should the book treat FGM and exorcism [OWNER]?

Sources to read in full

1. Nortier JL et al. 2000, New England Journal of Medicine (via THRIVING library, SY-02).
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5. WHO 2007, kava hepatotoxicity assessment.
6. National Academies 2005, chaparral appendix.
7. Saper RB et al. 2008, JAMA, on metals in Ayurvedic medicines.
8. WHO Study Group 2006, Lancet, on FGM and obstetric outcome.
9. Graz B et al. 2008, Malaria Journal.

At the bedside after the Fall

A household. One rule above all: ask what else was given, and give no remedy to an infant, a pregnant woman or anyone on salvaged medicine without checking this table. Keep sugar where it can be found in the dark. Eat ackee only from a pod that opened on the tree, never the seeds. Never put dung, ash or ghee on a cord, and never give an infant an enema. What it needs to start: this table on the wall, sugar, salt, clean water, clean cloth, and the habit of

writing down what was taken. The first failure to expect: a child given a grandmother's tonic, found drowsy in the night, and no one thinking of sugar.

A village of 300. A lay healer keeps a register of every remedy taken and every illness that follows, so a cluster of yellow eyes or swelling bellies shows within weeks. The gardens are cleared of Aristolochia, oleander, Gloriosa, Abrus and squill, and safe plants are labelled. Grain is picked over after any bad harvest. A boiled blade for every cut, and water for initiates and girls. What it needs: the register, a garden map, a scale, a pot for boiling blades, sugar in stock. The first failure to expect: weedy grain eaten after a drought because no one will waste food, with the first case six weeks later.

A district of 3,000. A nurse or doctor who can give glucose by drip if stock allows, clean a burn, and compare village registers to find a grain epidemic or a bad batch. The district bans metal remedies, lead eye powders and concentrated extracts. What it needs: the registers, a messenger route, a lab bench and a microscope. The first failure to expect: a trusted healer's tonic injuring livers in several villages, recognised late because each village saw only one case.

Protocols

Protocol 1. Before giving any remedy

1. Ask what it is, which part, how prepared, how much, how often and for how long.
2. Ask whether the person is pregnant, breastfeeding, under five, over 65, or has liver or kidney disease.
3. Ask about salvaged medicines. With an antiretroviral, transplant drug, contraceptive pill, warfarin, digoxin, anticonvulsant or antidepressant, give no St John's wort.
4. Check the table. If the entry's verdict is X, do not give it.
5. Identify any leafy plant in flower, or with a second person who knows it. Never give a comfrey-like leaf not seen in flower.
6. Write the name, dose and date in the register.

Protocol 2. Suspected herbal liver or kidney injury

1. Stop every herb and supplement at once. Keep a labelled sample of each.
2. Record the day the herb began and the day signs began. Herbal liver injury usually appears 3 to 18 weeks after starting (Larrey 1992, THRIVING library, PH-07).
3. Give fluids by mouth: oral rehydration solution of 1 litre clean water, 6 level teaspoons of sugar and half a level teaspoon of salt (THRIVING library, PH-10, ME-14). Hold back salt if the person is swollen and passing little urine.
4. Check daily for confusion, bleeding, bruising and falling urine. Any of these is a red flag.
5. Never restart the herb. Write it against the person's name.
6. If two or more people are affected, look for a shared food or grain.

Protocol 3. Sugar for the sugar poisons (ackee, Callilepis, Atractylis)

1. Suspect it in any child who vomits and then turns drowsy, floppy or fitting within 48 hours of a fruit, tonic or enema.
2. Awake and able to swallow: sugar or sugar water by mouth, about 0.3 g per kg, roughly a level teaspoon for a 10 kg child (ISPAD 2022). Repeat after 15 minutes if not better.
3. Drowsy or not swallowing: lay the child on their side. Moisten a level teaspoon of sugar, about 2.5 g, with a few drops of water and place it under the tongue for a child under 15 kg, or a heaped teaspoon, about 3.5 g, for a heavier child (Graz 2008).
4. Repeat every 10 to 20 minutes for at least two hours. Ten minutes is safer (Graz 2008).
5. Tolerance: too much sugar does no harm here. Too little does.

6. Once awake, sugar water or food every hour for 24 hours, and someone stays awake with the child all night.
7. Do not induce vomiting. Charcoal only within one hour and only if the child can drink it unaided (ME-14 Protocol 3).
8. Throw away the rest of the fruit or tonic, and tell the family which fruit and which part.

Protocol 4. The heart poisons (aconite, oleander, squill, foxglove)

1. Suspect it with tingling lips, vomiting, a slow or irregular pulse or yellow vision within hours of a root, leaf or tea.
2. Lay the patient flat. Do not let them stand or walk.
3. Keep them warm and still. Count the pulse every 15 minutes and write it down.
4. Nothing by mouth if vomiting or drowsy. Charcoal, 1 g per kg to a maximum of 50 g, only within one hour and only if they can drink it unaided (ME-14 Protocol 3).
5. If breathing falls below 12 a minute, breathe for them, 10 breaths a minute for an adult (ME-14 Protocol 2).
6. Give no extra potassium and no calcium salts (THRIVING library, ME-14).

Protocol 5. Metal remedy screen

1. Ask every family with a sick or slow child about eye powders, orange or yellow belly powders, and Ayurvedic pills or ashes.
2. Remove them from the house and keep them sealed, out of children's reach, so they cannot be reused.
3. Check the siblings and the mother, who share the source.
4. Record each product by name and origin.

Protocol 6. Newborn protection

1. Cut the cord with a boiled or new blade and tie it with boiled string.
2. Keep the cord clean and dry. Apply nothing except chlorhexidine where it exists (THRIVING library, MA-01).
3. Never apply dung, ash, mud or ghee.
4. No enemas, purges or herbal teas before six months, and no cutting of the uvula.
5. A baby who stops feeding, stiffens or has no wet nappy for six hours is a red flag.

Protocol 7. Grain after a bad harvest

1. After drought, flood or blockade, pick over grain by hand before milling.
2. Look for small dark or odd-shaped seeds that are not the crop. If in doubt, take a sample to the dispensary.
3. If two or more people develop a swelling belly or yellow eyes within weeks, stop eating that grain.

Numbers to carry

1. **No safe dose of Aristolochia.** Over 200 g in total gave urothelial cancer in 18 of 39 patients.
2. **About 2 mg of aconitine kills, and 0.2 mg poisons.**
3. **10 ml of pennyroyal oil** gives moderate to severe poisoning.
4. **6 to 48 hours.** Onset of ackee poisoning. Unripe fruit holds about 100 times the hypoglycin of ripe.
5. **2.5 g of sugar under the tongue every 10 to 20 minutes** for a child under 15 kg, or 0.3 g per kg by mouth.
6. **4 weeks to 4 months.** The usual delay from starting a herb to liver injury.
7. **39 per cent.** Mortality in Moroccan Atractylis poisoning, mostly in children.
8. **57 per cent.** Fall in indinavir exposure on ordinary St John's wort.
9. **Up to 98 per cent lead** in surma.

10. **Days 3 to 28.** When neonatal tetanus from a dirty cord appears.

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