

จากข้าวไซยาไนด์สู่พิษร้ายโกลด์ไซยาไนด์

From Cyanide to Gold cyanide

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2023 the year of Cyanide poisoning

Biggest criminal case in Thai history to be finalised, on Friday, against suspected serial killer Am Cyanide

June 12, 2023 at 8:44 pm by James Morris and Son Nguyen in Crime, Foreigners, Living, More News from Thailand, Thailand

Cyanide killings the deadliest in Thai crime history

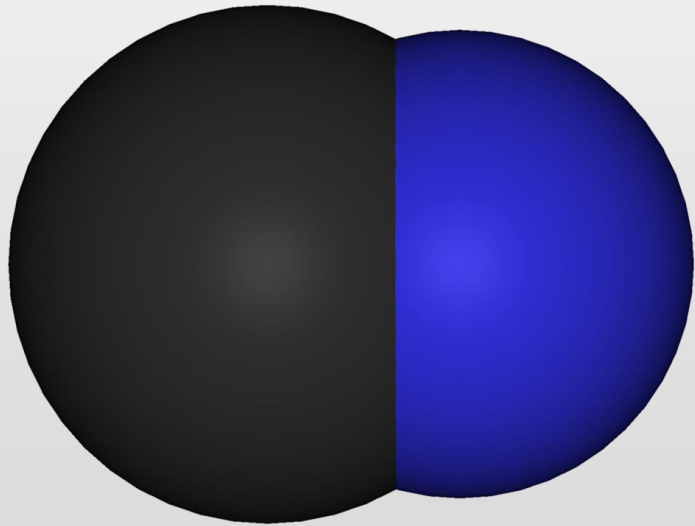


2023 the year of Cyanide poisoning

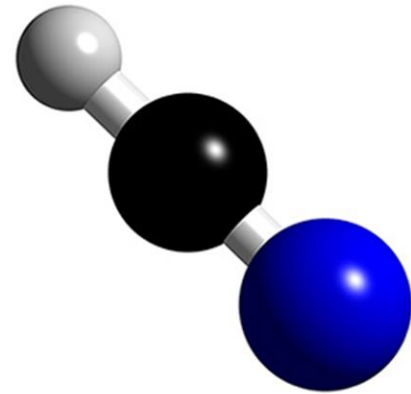


Cyanide

CN⁻



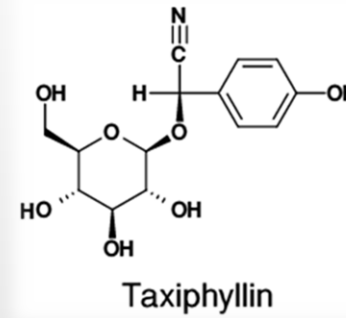
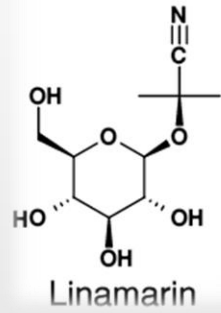
HCN



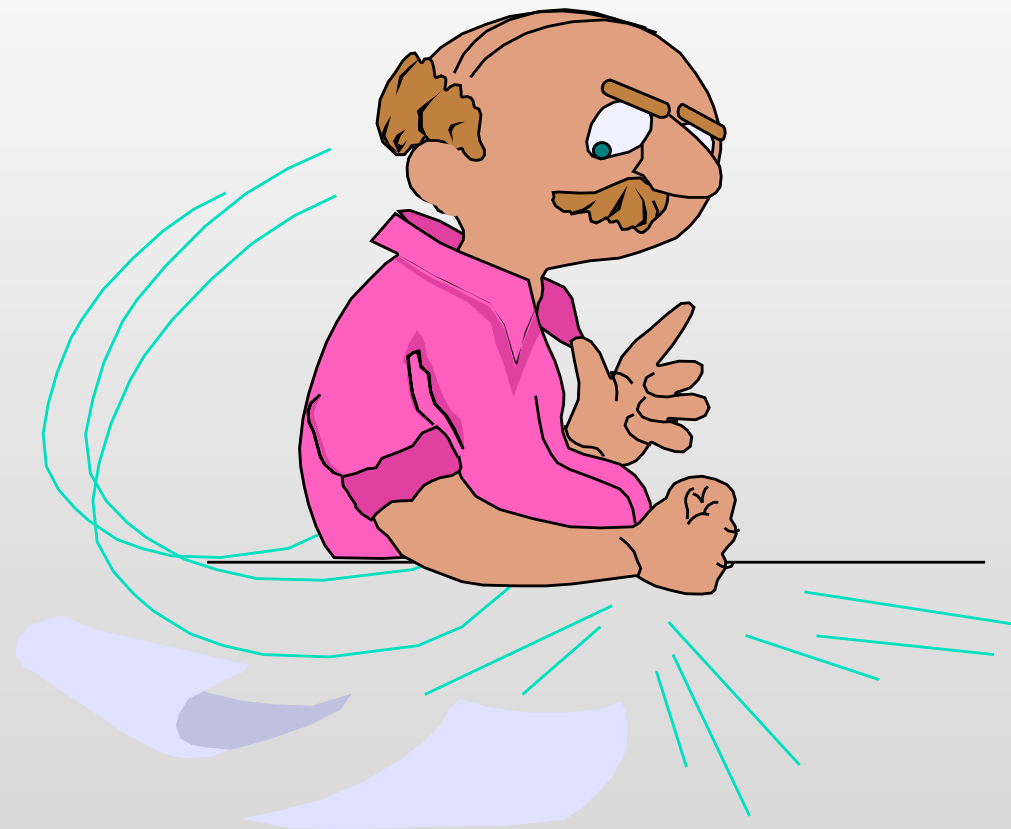
Sources

- Solution: HCN, NaCN, KCN
- Gas: hydrogen cyanide (HCN)
A by-product of burning plastics, wool, synthetic products
- Natural (cyanogenic glycoside): Cassava

Cyanogenic glycosides



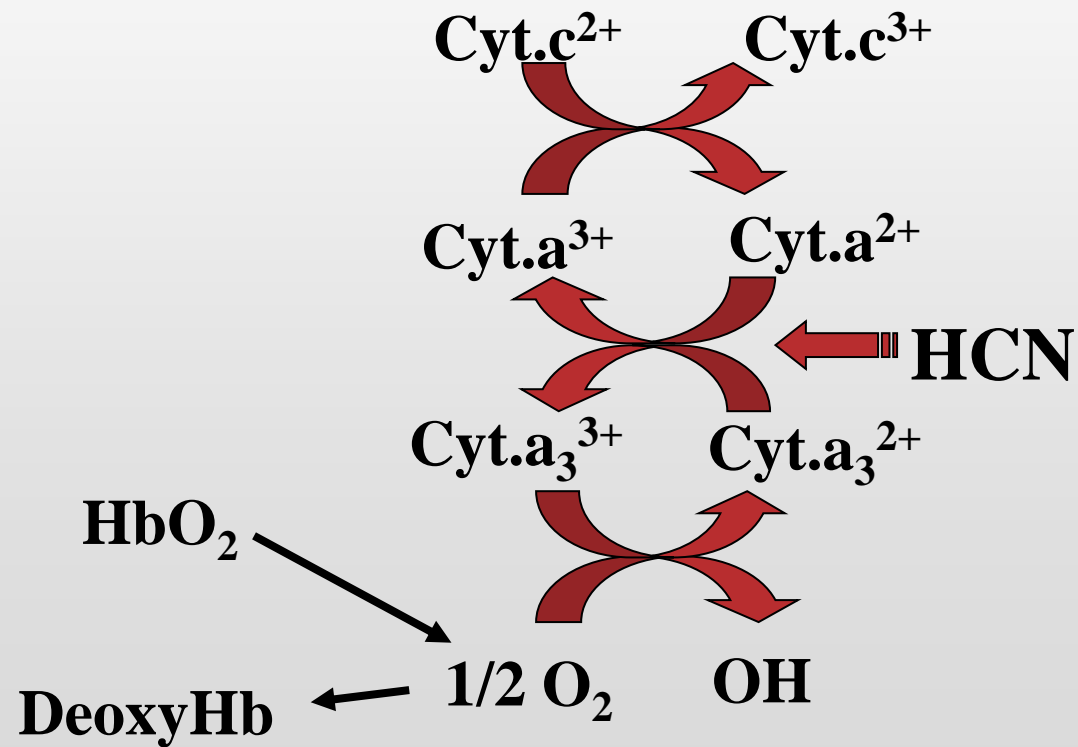
Cyanide poisoning?



Cyanide poisoning: Pathophysiology

- High affinity for metals
 - Complexes with metallic cations at catalytic sites of several enzymes
- Binds ferric (3+) iron of mitochondrial cytochrome oxidase (cytochrome a-a₃)

Cyanide poisoning: Pathophysiology



Cyanide poisoning: Pathophysiology

- Cellular hypoxia (histotoxic hypoxia)
- Tissue hypoxia
- Anaerobic metabolism
- Lactic acidosis

Cyanide poisoning: Clinical manifestation

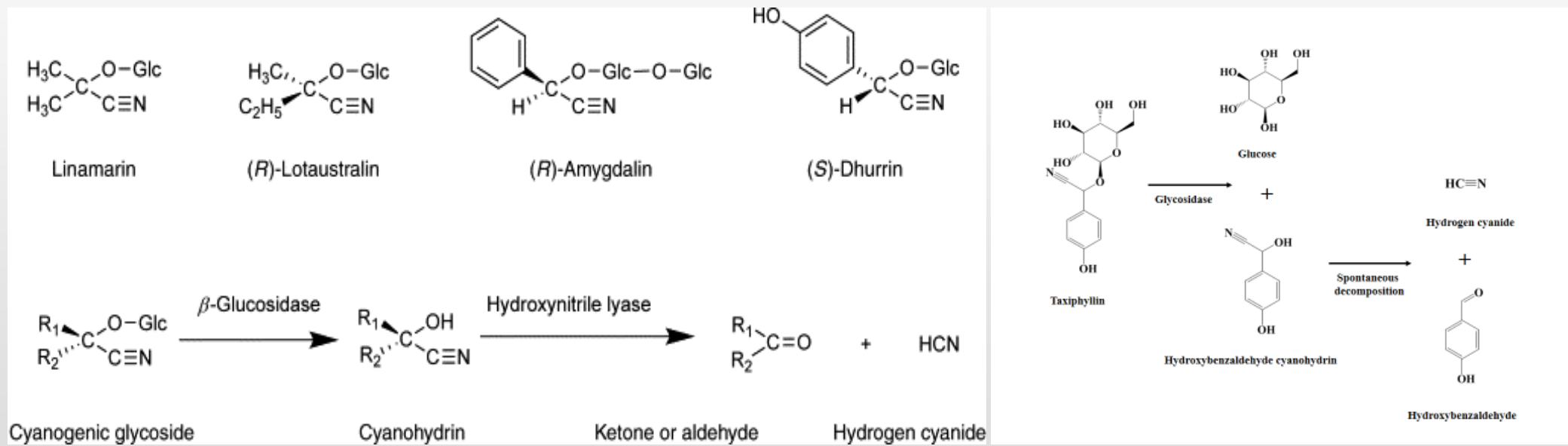
Manifestations of hypoxia

- **CNS:** Headaches, drowsiness, dizziness, seizures, coma, alteration of consciousness, depress respiratory center
- **Cardiovascular:** Hypertension, tachycardia, hypotension, bradycardia, asystole, cardiac collapse
- **Pulmonary:** Dyspnea, tachypnea, apnea
- **Systemic:** Metabolic acidosis

Clinical Manifestation: Hall-mark (I)

- Sudden (very rapid) onset of hypoxia
- * Ingested cyanide salts → symptoms within minutes
- Except: cyanogenic glycoside ingestion (take hours)

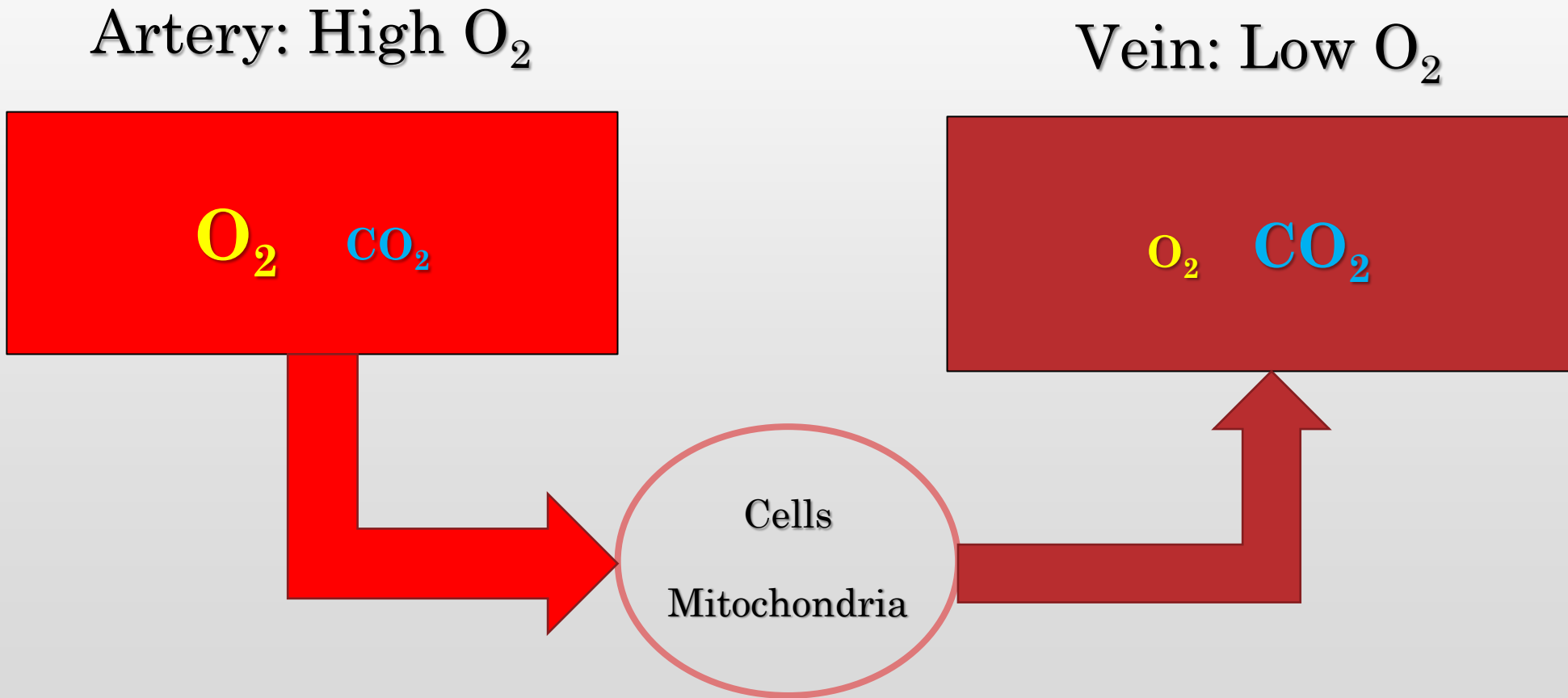
Hydrolysis of cyanogenic glycoside



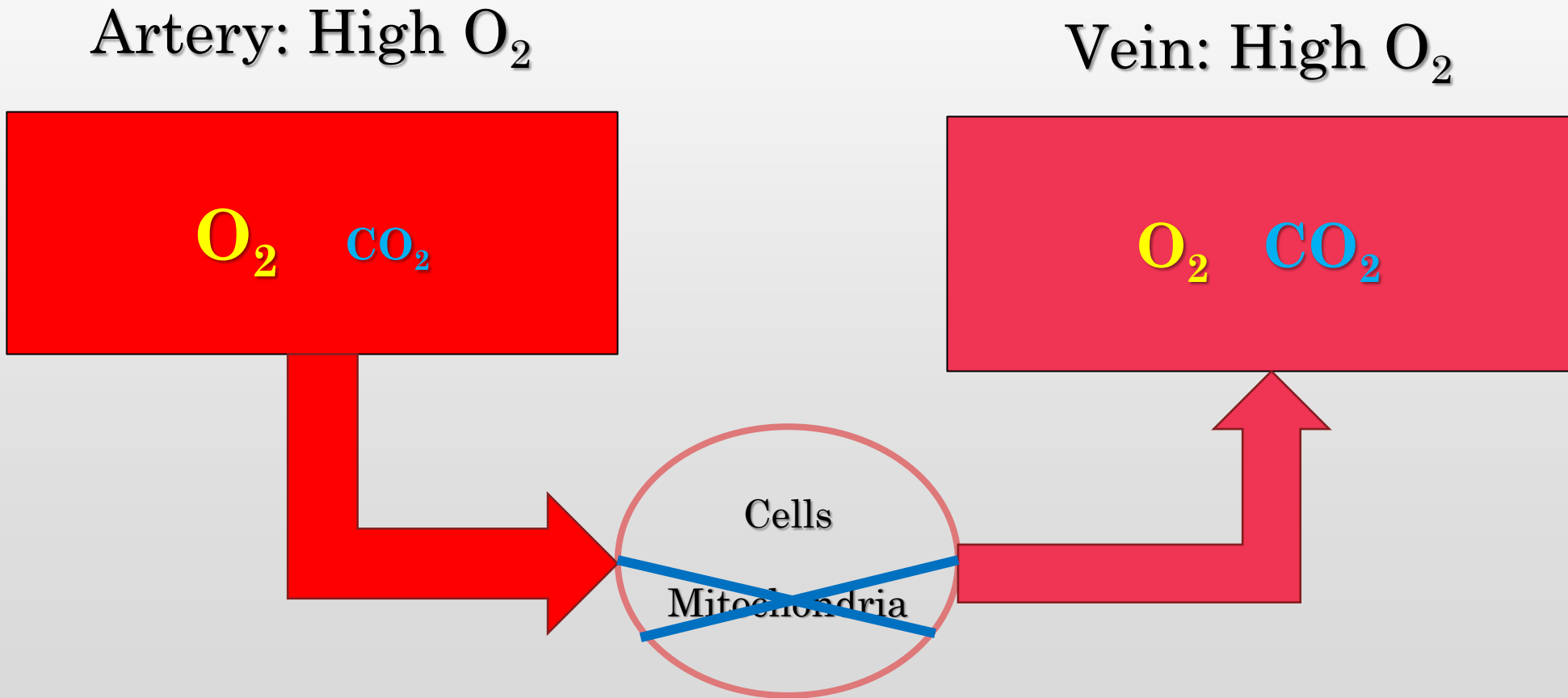
Clinical Manifestation: Hall-mark (II)

- Cyanide (poisoning) is NOT cyanosed.

Normal physiology



Cyanide poisoning: Pathophysiology



Clinical Manifestation: Hall-mark (II)

- **Cyanide (poisoning)** is NOT cyanosed.
- Red even hypoventilation
- SaO₂: normal
- Physical examination: Eye ground
“Color of retinal vein compares with retinal artery”

Normal eye ground

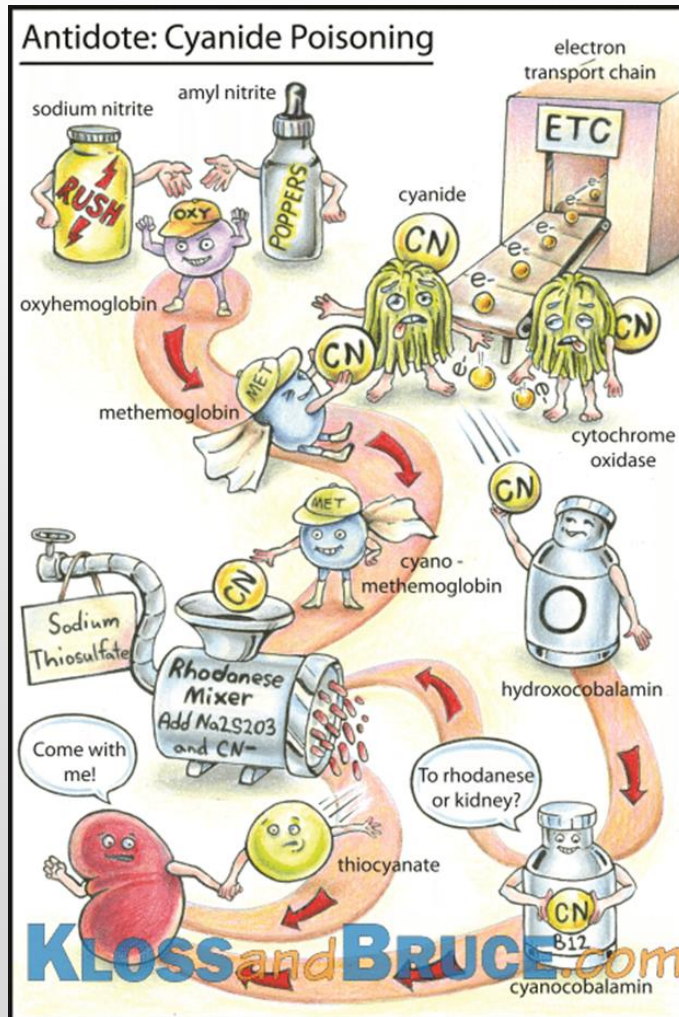


When to suspect cyanide poisoning?

Clue for diagnosis:

- By suspicion in any patients who developed unexplained sudden alteration of consciousness and cardiovascular collapse
 - Rapidly onset: minutes after ingestion
 - Begin with seizure and coma,
 - hypotension, cardiac arrest
 - hypoventilation, but **Not cyanosis**
 - High gap metabolic acidosis and normal oxygenation

Cyanide antidotes: Mechanism of actions



Sodium nitrite

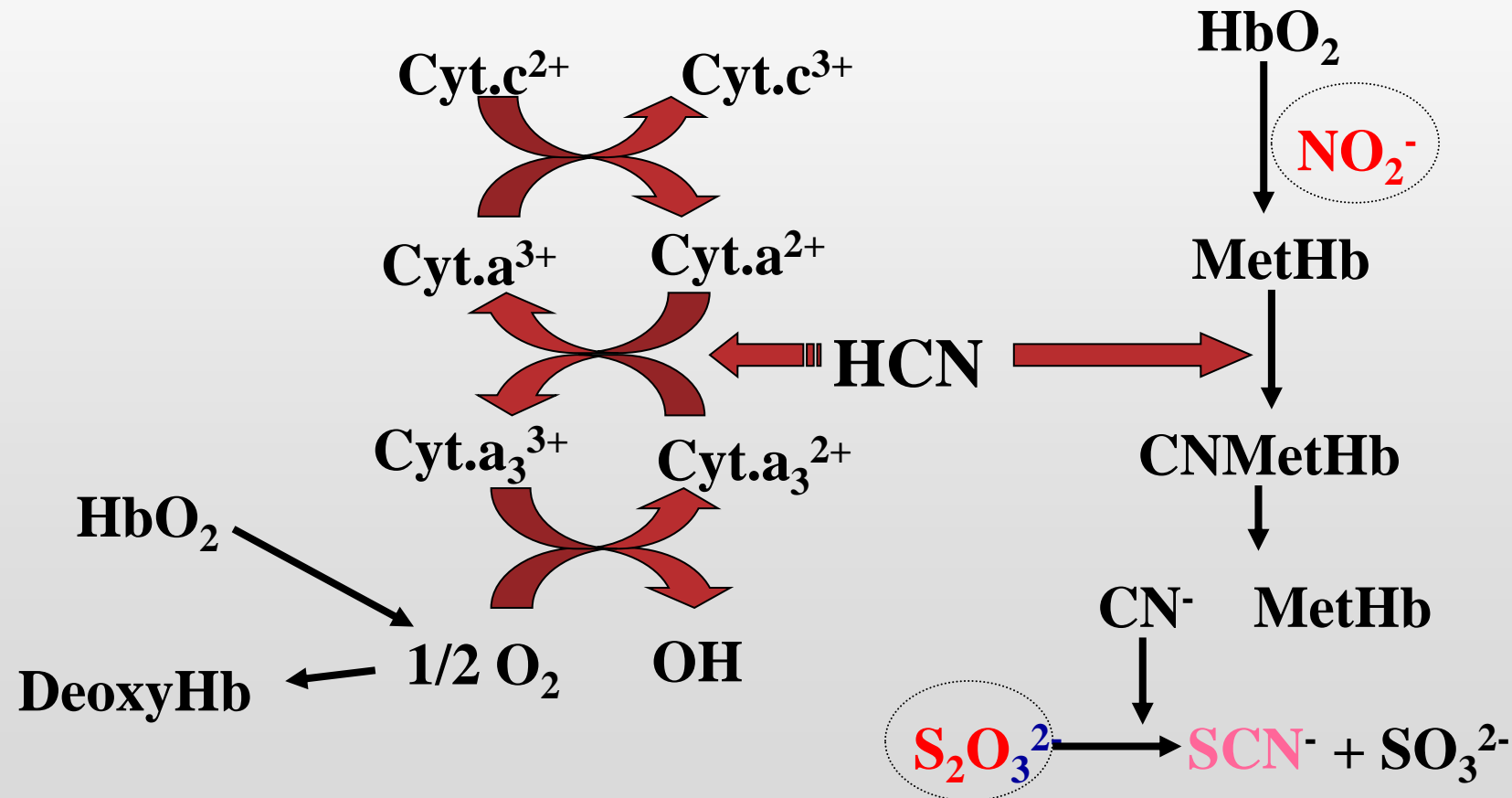


Sodium Thiosulfate



Hydroxocobalamin

Cyanide antidotes: Mechanism of actions



Antidote therapy for Cyanide poisoning

- Cyanide antidotes are the life saving drugs.
- Patients with cardiac arrest or who are suspected as having cyanide poisoning and instability of hemodynamic, should receive antidote as soon as possible.
- Do not wait for laboratory confirmation.