The chemical composition of *Physalia physalis* includes a gas mixture in the float with a high concentration of carbon monoxide () and oxygen (), and the venom in its tentacles contains proteins like **physalitoxin**, a potent hemolytic protein, along with various ion solutions and other organic compounds. The float's gas production relies on the amino acid L-serine and involves the enzyme folic acid, while the venom's composition is designed to cause ion influx and cell damage. [1, 2, 3, 4, 5, 6]

Float gas composition

- **Carbon monoxide ():**
  - Produced in a specialized gas gland (pneumadena) from L-serine
- **Oxygen ():**
- **Carbon dioxide ():** Negligible amounts
- **Nitrogen ():** Increases over time as the float gas is diluted by atmospheric air [4, 7, 8, 9]

Tentacle venom composition

- **Physalitoxin:** A major protein component of the venom, responsible for its hemolytic and lethal activity.
  - A large glycoprotein with a molecular weight of approximately .
- **Other proteins and compounds:** The venom contains other proteins and is complexed with ions, as evidenced by its effects on ion channels in cells.
- **Ion solutions:** Certain ion solutions like those from acetic acid can trigger the discharge of stinging cells (nematocysts). [2, 5, 10]

Other notable chemicals

- **310 mμ absorbance pigment:** A pigment found in the float and nematocyst-producing ampullae that absorbs at nm. It contains -alanine, -aminoisobutyric acid, and a tryptophan derivative.
- **Folic acid:** Found in high concentration in the gas gland, suggesting a role in carbon monoxide production. [4, 7, 11]

AI responses may include mistakes.

[1] https://www.nature.com/articles/s41598-019-51842-1
[2] https://www.mdpi.com/2673-9976/24/1/2
[3] https://www.sciencedirect.com/science/article/abs/pii/S0041010199002135
[4] https://www.researchgate.net/publication/253617875_The_source_of_carbon_monoxide_in_the_float_of_the_Portuguese_man-of-war_Physalia_physalis_L
[5] https://www.sciencedirect.com/science/article/pii/0005279581900696
[6] http://www.thecephalopodpage.org/MarineInvertebrateZoology/Physaliaphysalis.html
[7] https://journals.biologists.com/jeb/article/37/4/698/13393/The-Source-of-Carbon-Monoxide-in

-the-Float-of-the
[8] https://journals.sagepub.com/doi/abs/10.3181/00379727-107-26724
[9] https://thebiofiles.com/info/5111
[10] https://www.sciencedirect.com/science/article/pii/S0041010199001567
[11] https://www.sciencedirect.com/science/article/pii/0010406X69900425