Pretreatment with halogenated alcohol and alkane anesthetics protects *Saccharomyces cerevisiae* yeast from a usually lethal heat stress.

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Halogenated volatile anesthetics protect tissues from ischemic or hypoxic damage in humans and other organisms.¹

Halogenated volatile anesthetics → Protection → ischemia/hypoxia

Similarly, activation of the environmental stress response (ESR) through a mild or moderate stress protects cells from a subsequent severe stress of the same or a different kind.²

mild to moderate environmental changes → Stress Response → Protection → severe environmental changes

***S. cerevisiae* yeast is an established organism for studying the cellular stress response.³**

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Incubation with Anesthetic Compounds at Varying Temperatures

mid-log phase culture → 60 min → WASH → 52°C → 5 min → Dilution and Incubation 30°C → 24 - 72h → Quantify viable cells (OD/CFU)

Optical Density (OD)
The number of cells in a liquid culture is proportional to its optical density (light scattering).

Colony Forming Units (CFU)
The number of colonies growing on a agar plate correlates with viable cells in a culture.

✓ Halogenated alcohol and alkane anesthetics can activate the cellular stress response in *S. cerevisiae*. Their potencies for protection from a heat shock correlate with their lipophilicity.

✓ Although propofol is more lipophilic, CBr₄ is significantly more potent and efficacious for protection. This correlates with clinical observations that halogenated volatile anesthetics are better suited for organ protection than propofol.

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