

The therapeutic potential of regulated hypothermia

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Abstract Reducing body temperature of rodents has been found to improve their survival to ischaemia, hypoxia, chemical toxicants, and many other types of insults. Larger species, including humans, may also benefit from a lower body temperature when recovering from CNS ischaemia and other traumatic insults. Rodents subjected to these insults undergo a regulated hypothermic response (that is, decrease in set point temperature) characterised by preference for cooler ambient temperatures, peripheral vasodilatation, and reduced metabolic rate. However, forced hypothermia (that is, body temperature forced below set point) is the only method used in the study and treatment of human pathological insults. The therapeutic efficacy of the hypothermic treatment is likely to be influenced by the nature of the reduction in body temperature (that is, forced versus regulated). Homeostatic mechanisms counter forced reductions in body temperature resulting in physiological stress and decreased efficacy of the hypothermic treatment. On the other hand, regulated hypothermia would seem to be the best means of achieving a therapeutic benefit because thermal homeostatic systems mediate a controlled reduction in core temperature. (*Emerg Med J* 2001;18:81–89)

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