

Melting away

A dip in the hot tub—“heat therapy”—can improve insulin sensitivity in individuals with diabetes. Jason Chung *et al.* examine the mechanistic basis for this effect and home in on a new drug target (*Proc. Natl. Acad. Sci.*, doi:10.1073/pnas.0705799105).

The researchers found that obese, insulin-resistant humans have low levels of heat-shock protein 72 (HSP72) in skeletal muscle, and that, in mice, heat therapy can induce HSP72. When HSP72 was genetically overexpressed, mice were protected from insulin resistance after consuming a high fat diet.

The researchers next found that HSP72 affected the activation of the serine-threonine kinase c-Jun amino terminal kinase (JNK), which can impair insulin signaling. Mice expressing high levels of HSP72 had reduced JNK activation, which allowed the insulin pathway to continue signaling despite a high-fat diet. The HSP72-overexpressing mice also had increased energy expenditure and reduced fat stores compared to wild-type mice fed a high-fat diet.

Inducing HSP72 expression in obese mice with a small molecule resulted in improved insulin sensitivity throughout the body. The drug is now in clinical trials.—KS



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Fighting diabetes.