Lean for life

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Infant formula and other baby foods that provide permanent protection from obesity and diabetes into adulthood could be on shop shelves soon, reports Lisa Melton in *Chemistry & Industry*.

The foods, under development at the Clore Laboratory at the University of Buckingham, will be supplemented with leptin, the hunger hormone. Those who take the foods early in life should remain permanently slim. 'Like those people who are lean by nature even though they overeat -- like we all do -- they will tend to be inefficient in terms of using energy,' says Mike Cawthorne, who heads the Metabolic Research group at Clore.

Cawthorne's group has already demonstrated that supplementing infant rats' diets with leptin means that they never get fat or develop diabetes (*AM J Physiol Regul Integr Comp Physiol*, doi: 10.1152/ajpregu.00676.2006). Even animals fed a high-fat diet remained slim.

Leptin, the fat hormone that turns off hunger in the brain, is produced in the body throughout life. Its discovery was heralded as a major breakthrough, but research in adults proved disappointing because individuals soon seemed to resist its hunger-quenching effect.

But Cawthorne says this time things are different. Providing leptin earlier enough effectively hard-wires the body's energy balance. In fact, whether one is fat or thin may be determined before birth. Feeding the hormone to pregnant rats has been found to have a lifelong impact on

their offspring's predisposition to obesity. Animals born of leptin-treated mothers remain lean even when fed a fat-laden diet, while those from untreated dams gained weight and developed diabetes.

The difference boils down to energy expenditure. The offspring of leptin-treated mothers burn up more energy. 'The infants are permanently inefficient in terms of using energy,' says Cawthorne.

Leptin-based products may also find their way into the pet obesity market.

Edinburgh researcher Jonathan Seckl says. 'We need to know whether leptin is acting pre- and post-natally, figure out how it works, and dissect the possible side-effects before this becomes a potential approach for humans. Nonetheless, this is good science,' he says.

Source: Society of Chemical Industry