How a flat white keeps lid on mood swings

Caffeine keeps stress-heads from spiralling into depression, scientists have discovered.

Portuguese and Brazilian biochemists have uncovered the molecular mechanisms that help caffeine shield the chronically stressed from mood disorders.

In a study of mice, the team, which also included researchers from Germany, Oman and the US, found caffeine prevented a stress-related chemical from triggering changes in the brain.

Co-author Rodrigo Cunha said this suggested compounds in caffeine were behind its protective effect. “(The research) provides a causal demonstration of previous studies showing an inverse correlation between caffeine intake and incidence of depression,” said Professor Cunha, a neuroscientist with the University of Coimbra in Portugal. “This implies that regular coffee or tea consumers should be less prone to mood alterations in stressful conditions.”

He said caffeine achieved its “excitatory” effects by blocking A1 receptors, one of the four types of cellular structures that react to the stress chemical adenosine. A1 receptors played an “inhibitory” role,
slowing the heart to protect it from oxygen deficiency during stressful situations, he said.

The new study suggests caffeine also acts on A2A receptors, which are facilitators rather than inhibitors. Activation of A2A receptors can improve the flow of blood to the heart and reduce blood pressure.

Professor Cunha said that by blocking these receptors, caffeine prevented the brain from functioning abnormally. These “normalising” properties of regular caffeine consumption had also been demonstrated in studies suggesting it helped to preserve memory in Alzheimer’s sufferers, and to decrease impulsive behaviour in children with attention deficit hyperactivity disorder.

He said the findings suggested people instinctively used caffeine as a “natural” strategy to cope with anticipated stress. A separate study had found nurses increased their coffee intake when they rotated into intensive care wards.

But he said caffeine had different effects on different people, making it hard to recommend daily coffee doses. The study is reported today in the Proceedings of the National Academy of Sciences.