



MARKET CHALLENGES

Depression is a very common mental disorder and over 350 million patients of varied age groups suffer from this disease. An individual with severe depression can have suicidal thoughts and behaviors. According to a 2012 estimate by the WHO, about 3,000 suicides take place each day, resulting in more than a million deaths each year.

In addition, current treatments have a long latency and have long-term side-effects (weight gain, impotence...). Many of them are now off-patent and new drugs are thus eagerly awaited in the field.



INNOVATIVE SOLUTIONS

Depression can be the consequence of expositions to stressful events. A team from the Brain and Spine Institute established the correlation between BDNF protein levels in blood and vulnerability to depression. By involving BDNF in the maintenance of the cellular redox homeostasis, the team proved that the antioxidative molecule 4-hydroxy-TEMPO (TEMPOL) can successfully prevent the appearance of clinical signs of depression.



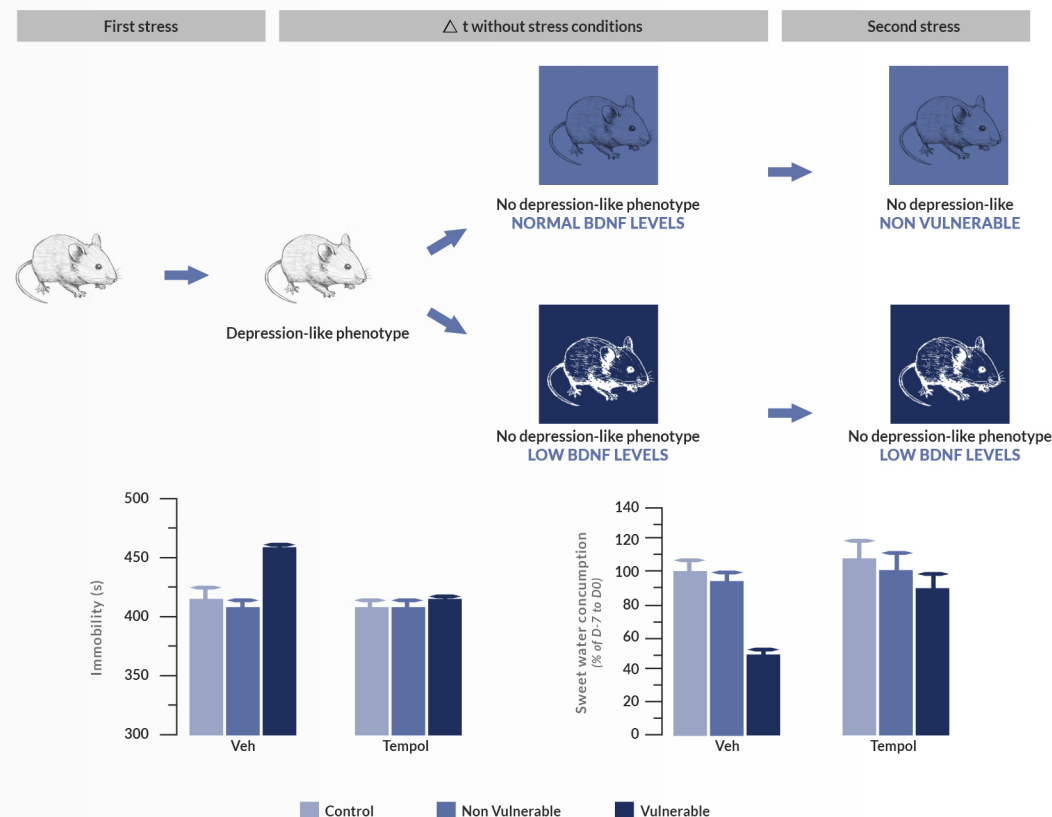
SUGGESTED APPLICATIONS

- Prevention and treatment of major depression
- Prevention of disease-associated depression



DEVELOPMENT STATUS

- The proof-of-concept of 4-hydroxy-TEMPO has been established in *in vivo* models: rats were submitted to classical trials (such as social defeat protocol), to induce depressive-like phenotype. Markers of oxidative stress and depressive-like behavior were then monitored.
- The proof-of-concept has been further extended on soldiers coming back from theater of war: susceptible men were screened using BDNF dosage.
- In addition, 4-hydroxy-TEMPO mechanism of action has been explored using *in vitro* tests on cellular models.



COMPETITIVE ADVANTAGES

- Known antioxidant properties with exhaustive data concerning its tolerance
- Small chemical compound able to cross the blood-brain barrier
- Patient stratification with BDNF dosage
- Proposed Mechanism of action: Hydroxy-Tempo is acting on the redox homeostasis and prevents the deleterious effects induced by the lack of BDNF in vulnerable individuals