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Rice bran, a functional extract, new scientific evidences for potential health benefits in Alzheimer's disease therapy

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It is estimated that more than 500000 tons of rice bran is produced in Egypt every year. Though its nutritional values and potential health benefits, it is used, due to its instability, as animal feed rather high value functional food and/or high value added nutraceutical. A number of papers were published showing, the stabilized rice bran extract, potential health benefits in some diseases like Alzheimer's disease. The product is registered (Oryza), another one under registration at the Egyptian Ministry of Health (Riciplex). A functional food against Alzheimer is currently developed in Germany, based on the stabilized Egyptian rice bran supplied. In the present study the effects of RBE were examined in comparison to a well-known PPARγ agonist pioglitazone. RBE administration significantly improved the spatial working and reference memory in addition to non-spatial recognition memory in the LPS mouse model as shown by object recognition test, y-maze and water maze test. Pioglitazone improved memory, in the Y-maze and object recognition test with no effect in the water maze test. Interestingly, the effect of RBE on memory was abolished in the group injected with PPARγ-antagonist before RBE treatment, indicating the important role of PPARγ in the mechanism of action of RBE. Furthermore, the RBE -PPARγ DNA binding activity was measured in the brain extract samples of the mouse treated groups using transcription factor assay kit. Results showed a significant increase in PPARγ binding to PPRE with RBE treatment and this effect was reversed upon PPARγ antagonist injection before RBE treatment. These findings demonstrate that the involvement of RBE in the beneficial effects on cognitive performance is correlated with its action on PPARγ modulation, providing novel insight into its neuroprotective role in AD.

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Pharmaco-mobile brain/body imaging: Investigating the interactions between exercise and medicaments

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Methodology that would allow the investigation of interactions between brain activity sources, natural motor behavior and drug interactions would bring benefits such as personalized treatments for ADHD and understanding of disease mechanisms. With such methods, investigators and clinicians would be able to monitor and adjust treatments of impairing motor conditions. On one hand, Pharmaco-EEG allows the inspection effects of substances in the central nervous system activity. However, Pharmaco-EEG leaves out the effects on motor behavior and how physical exercise influences pharmacokinetics. On the other hand, electroencephalography suffers from inherited methodological problems that restrict its use during motion. Yet, this is the only light enough mobile non-invasive sensing modality with adequate temporal resolution to record brain activity on the time dimension of natural motor behavior. Recent advances allow for synchronous measurements of brain and body dynamics (MoBi). Combining MoBi methods with pharmacokinetic analysis results in the creation of Pharmaco-Mobile Brain Body Imaging (P-MoBi). Using source localization to determine the cortex areas responsible for different activities, and the time resolution of the EEG for functional connectivity brain mapping, researchers may be able to determine the changes and influences of the resulting interaction between exercise and medicaments on brain functions and corresponding motor performance. This talk presents the research potential of P-MoBi methodologies and innovations that allow such measurements.

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