

Gunter P. Eckert, Ph.D.  
Assoc. Professor



[Home](#) [News](#) [Research](#) [Projects](#) [Methods & Models](#) [Team](#) [Publications](#) [Presentations](#) [Vita](#) [Contact](#) [Sitemap](#)



Goethe-University  
Campus Riedberg  
Department of Pharmacology  
Biocenter N260 R1.09  
Max-von-Laue Str. 9  
D-60438 Frankfurt  
Germany

Phone: +49 69 798 29378  
Fax: +49 69 798 763 29378

[info@nutritional-neuroscience.com](mailto:info@nutritional-neuroscience.com)

## Rice bran: a energy booster

« [Omega-3-fatty acids for a healthy brain](#)

[Projects](#)

[Billberry extract for brain protection](#) »

In Egypt, the cultivated area of rice is about two million acres which annually produce 8 million tons of rice with more than 500 000 MT rice bran. Rice bran is produced as a by-product in the rice milling process, a process in which the outer layer of the rice grain is removed to refine it. Rice bran is especially rich in bioactive components showing significant biological effects, such as anti-inflammatory, cholesterol-lowering, antioxidant and anti-diabetic activity. Key components are oryzanols (a mixture of ferulic acid esters of triterpene alcohol and sterol), tocopherols and tocotrienols.

However, because of the extreme instability of the latter, it becomes rancid and unsuitable for human use within hours of milling. Consequently, it is either discarded or used as animal feed, thereby pouring its potential medical usefulness down the drain at the expense of a great financial and human utility loss. The first step towards making use of rice bran for human use was to render it stable before any processing can take place. In addition, complete phytochemical as well as preliminary toxicity studies have been carried out to ensure its safety and comparability to the world wide stabilized rice bran product. The steps to follow would be to provide an extract with proven bioactivity, which can then be further developed into a suitable and effective nutraceutical to safeguard against the different ailments mentioned above. Furthermore, rice bran has well established nutritive properties and could be incorporated in many floury food products, such as biscuits, cereals and pasta varieties to increase dramatically their nutritive value.

Recent reviews strongly suggest that rice bran bioactives have the potential to lower blood cholesterol levels, to increase an individuals' antioxidant status, to suppress inflammation, to normalize blood glucose levels and to attenuate neurodegenerative events. For decades already it has been known that rice bran contains most of the micronutrient, vitamin and bioactives (e.g. tocotrienols (TCTs),  $\gamma$ -oryzanol (ORYL), and policosanols (PCS) found in rice. For most of these constituents, especially the bioactives, health-beneficial effects have been described and some of the constituents are almost exclusively found in high amounts in rice bran. During the past two years, the applicant and his team were engaged in confirming the efficacy of their stabilization process and succeeded in analyzing the bioactives and micronutrients of the local rice bran.



Together with partners from Egypt, we are assessing the effect of Egyptian rice bran extracts on prevention of mitochondrial dysfunction in cell culture and animal models of aging and Alzheimer's Disease. The aim of our studies is the establishment of rice bran extract as potential food supplement to prevent neurodegeneration. The project is carried out by Ph.D. student Stephanie Hagl. (Supported by EU/RDI #C2/S1/118 and the BMWi #KF320461).

© PD Dr. Gunter P. Eckert 2014