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# Confirms Synergistic Effect of Proprietary Purple Tea Extract and Creatine in Promoting NO Production!

We are pleased to announce that we have **discovered a synergistic effect in promoting Nitric Oxide (NO*1) production when combining Purple Tea Extract** (a unique dietary ingredient launched in 2013, sourced from purple tea and standardized to contain GHG (1,2-di-Galloyl-4,6-Hexahydroxydiphenoyl-β-D-Glucose)) **with Creatine. We have filed a patent application for this discovery.**

## ■ Patented Mechanism of Action

Our studies using Human Umbilical Vein Endothelial Cells (HUVECs) confirmed the **NO production-promoting effects of Purple Tea Extract (containing GHG) and Creatine, which is also known to enhance exercise performance**.

- ✓ Compared to a control of approximately 0.5 μM, **Purple Tea Extract at a concentration of 100 μg/mL significantly increased NO production to 1.6 μM.**
- ✓ Based on existing literature, we applied Creatine at concentrations of 1 mM or 10 mM to the cells, but **observed no change in NO production.**
- ✓ Purple Tea Extract at 100 μg/mL was combined with Creatine at 1 mM or 10 mM and applied to the same cells, **NO production significantly increased to 2.6 μM and 2.9 μM, respectively (Figure 1).**

These results clearly demonstrate that the combination of Purple Tea Extract and Creatine synergistically enhances NO production.

Previous research on Purple Tea Extract has shown its ability to promote vasodilation through NO production, improve lower body muscle endurance, and reduce levels of Lactate Dehydrogenase (LDH*2), a common indicator of muscle damage. **By combining it with Creatine, we expect even greater contributions to improved exercise performance and reduced muscle damage.**

## ■ Future Developments

Given the expanding demand for Creatine in North America and Europe, similar growth is anticipated in Asia, including Japan. With the data obtained from this research, we aim to simultaneously enhance recognition in the domestic market and establish a competitive advantage in international markets for the Purple Tea x Creatine combination. This will allow us to establish a new position within the global sports nutrition market.

### 〈Experimental Results〉

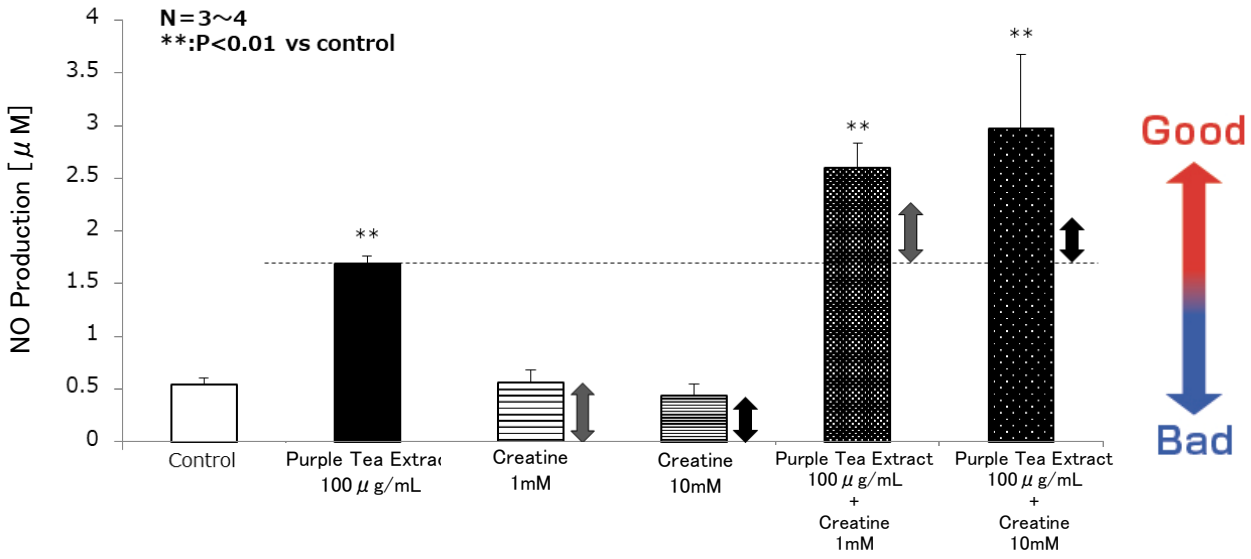


Figure 1. Evaluation Results of NO Production-Promoting Effect with Combination of Purple Tea Extract and Creatine.

## ■ About Purple Tea Extract

Purple Tea

Purple Tea is a new tea variety developed over 25 years by the Tea Research Foundation of Kenya (TRFK) with the aim of promoting self-reliance in Kenya. In December 2013, our company launched "Purple Tea Extract" as a functional ingredient standardized for the unique polyphenol "GHG," which is not found in other teas like green tea.

Through continuous research, we have developed its excellent functionalities, including diet and beauty benefits, as well as exercise performance effects, striving to enhance its added value. Furthermore, since 2020, we have initiated an effort to support Africa by donating a portion of Purple Tea Extract/Purple Tea sales through the international NGO Plan International. We have widely promoted how Purple Tea contributes to the SDGs as an "SDGs-compliant ingredient." Our SDGs initiatives through Purple Tea have also been supported by the Embassy of Kenya.

We had discovered that purple tea extract alone promotes AMPK*3 activity and nitric oxide (NO) production. Human clinical trials in the United States have confirmed its positive effect on exercise performance. We have found that both purple tea extract and GHG are useful as NO production enhancers, and patents were obtained in Japan and the U.S. in 2024 (for NO production enhancers, lower limb muscle power improvers, and muscle damage reducers associated with intensive exercise).

## ■ Glossary

*1 NO :
Nitric Oxide (NO), produced by endothelial cells, has vasodilatory effects and increases blood flow in microvessels. This contributes to the recovery of muscles to their pre-exercise state after physical activity.

*2 LDH :
An enzyme that increases in the body when there is illness or inflammation. It is known to increase due to muscle soreness, among other reasons.

*3 AMPK :
One of the central regulators of metabolism, this enzyme is involved in maintaining cellular energy homeostasis. It activates when energy levels are low (during and after exercise), promoting energy metabolism.

Sincerely,
Oryza Oil & Fat Chemical Co., Ltd.