

## **Dietary nitrate in Japanese traditional foods lowers diastolic blood pressure in healthy volunteers.**

*Sobko T1, Marcus C, Govoni M, Kamiya S.*

### **Abstract**

#### **BACKGROUND:**

Japanese longevity is the highest in the world. This is partly explained by low occurrence of cardiovascular diseases, which in turn is attributed to the Japanese traditional diet (JTD). Recent research demonstrates that nitric oxide (NO), a key regulator of vascular integrity, can be generated from nitrate (NO<sub>3</sub><sup>-</sup>), abundantly found in vegetables. It can reduce blood pressure (BP) via its serial reduction to nitrite (NO<sub>2</sub><sup>-</sup>) and to bioactive NO. Interestingly, JTD is extremely rich in nitrate and the daily consumption is higher than in any other known diet.

#### **OBJECTIVE AND DESIGN:**

In a randomized, cross-over trial we examined the effect of a 10-day period of JTD on blood pressure in 25 healthy volunteers. Traditional Japanese vegetables were encouraged to be consumed and avoided during the control period. Daily nitrate intake was calculated.

#### **RESULTS:**

Nitrate naturally provided by the JTD was 18.8 mg/kg/bw/day, exceeding the Acceptable Daily Intake by five times (ADI, 3.7 mg/kg/bw). Plasma and salivary levels of nitrate and nitrite were higher at the end of the JTD period. Diastolic BP decreased on average 4.5 mmHg during JTD compared to the control diet (P=0.0066) while systolic BP was not affected. This effect was evident in normotensive subjects and similar to that seen in the recent studies.

#### **CONCLUSIONS:**

An ordinary nitrate rich diet may positively affect blood pressure. Our findings further support the importance of the role of dietary nitrate on BP regulation suggesting one possible explanation of healthy aspects of traditional Japanese food.