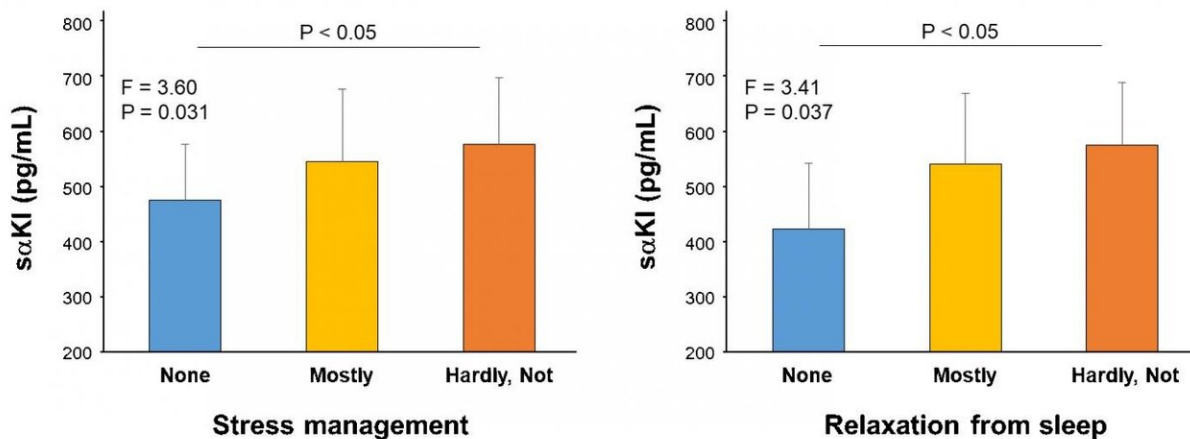


# Could alpha-Klotho be a potential biomarker of stress?

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sαKI levels increased in subjects who reported that their stress management was “hardly or not managed” and relaxation from sleep was “hardly or not obtained”.

The relationship of serum levels of soluble α-Klotho (sαKI) with stress management and relaxation from sleep. Credit: Osaka University

Stress affects both mental and physical health. Although stress is known as one of the major risk factors of health disorders in modern society, a biomarker of stress has not yet been well established. In a study published in the *Journal of Investigative Medicine*, researchers from Osaka University reported a unique association between stress and serum levels of α-Klotho (αKI).

$\alpha$ Kl was originally established as an anti-aging gene and is reported to relate to various diseases. The researchers have previously reported that smoking, which is known as a [stress](#) factor, increased serum levels of soluble  $\alpha$ Kl (s $\alpha$ Kl) (*Scientific Reports*, 2015). In the study, association between stress and serum levels of s $\alpha$ Kl were evaluated, by using the Kessler Screening Scale for Psychological Distress (K6), which is widely used to screen [mental health problems](#).

As the study subjects, apparently healthy individuals who had never smoked were randomly chosen. Physical parameters, biochemical parameters, and information regarding the lifestyle were obtained from all subjects.

Serum levels of s $\alpha$ Kl were significantly increased in subjects who reported poor stress management. In addition, s $\alpha$ Kl levels were significantly increased in subjects who reported that they did not feel relaxed after sleep (Figure 1). These results suggest that stress management and sleeping conditions influenced the serum levels of s $\alpha$ Kl. Moreover, serum levels of s $\alpha$ Kl showed the same tendency as the K6 score in terms of the relationship between stress management and sleeping conditions.

"Although the number of people who feel stressed has been increasing, a useful objective parameter of stress is still unknown. We focused on the serum levels of s $\alpha$ Kl as a possible objective biomarker of stress, and found an interesting association between stress and s $\alpha$ Kl levels," says researcher Kaori Nakanishi of Osaka University. "From the study, it is suggested that increased serum levels of s $\alpha$ Kl might be predicting the stressed condition. We are speculating that serum levels of s $\alpha$ Kl could be a predictive factor of stress."

**More information:** Kaori Nakanishi et al, Implication of alpha-Klotho as the predictive factor of stress, *Journal of Investigative Medicine*

(2019). [DOI: 10.1136/jim-2018-000977](https://doi.org/10.1136/jim-2018-000977)

Provided by Osaka University

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