

Research Highlights

Lavender oil may offer a new treatment for murine models of allergic asthma

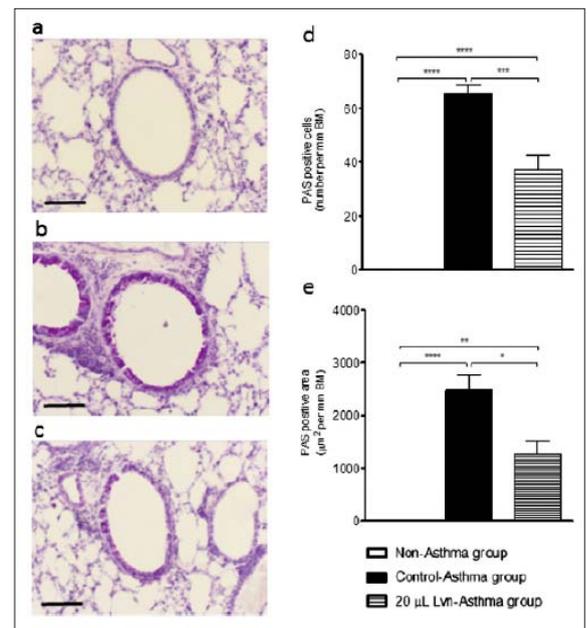
In studies using mice researchers at Okayama University demonstrate the therapeutic effects of lavender essential for treating asthma.

Asthma affects over 200 million people worldwide and can be fatal. The condition is characterised by shortness of breath, often in response to allergens. Once triggered, the production of inflammatory cytokines and mucins - gel-forming mucos glycoproteins - leads to obstruction, hyperresponsiveness and inflammation of the airways. Evidence of beneficial effects from lavender essential oil (Lvn) on other immune responses prompted Tomoe Ueno-Iio, Misako Shibakura and colleagues at Okayama University and Okayama University Graduate School of medicine to examine the effect of Lvn on a mouse model of acute asthma.

The researchers used ovalbumin to artificially induce asthma in mice, with some were exposed to Lvn, others weren't, and a non-asthma control was not treated with ovalbumin. They characterised the resulting symptoms by monitoring lung resistance and examining both the cells found in fluid washed from the lungs (Bronchoalveolar lavage, BAL) and lung tissue. Ueno-Iio, Shibakura and colleagues observed a reduction in cytokine levels in BAL fluids and their mRNA expression, as well as a decrease in one of the mucins secreted most in the respiratory tract, Muc5b.

The researchers highlight that one of the main components of Lvn is linalyl acetate, which previous research by other groups has been shown to inhibit NF- κ B in human cancer cells. NF- κ B is also known to be activated to produce the gene for the Muc5b. Significantly Muc5b was inhibited in the mice exposed to Lvn but not another highly secreted mucin, Muc5ac, which is not regulated by NF- κ B. The T-helper-2 cells that produce the key cytokines (IL)-4, IL-5 and IL-13 involved in airway inflammation are also regulated by NF- κ B, and were found to be inhibited by exposure to Lvn.

They conclude in their report, "Our results present a new role for this essential oil in allergic airway inflammation and mucous cell hyperplasia. But we need further studies if we want to apply these findings to humans because they may only be applicable to mice at this moment."



Detection of mucus-producing cells by periodic acid-Schiff (PAS) staining. The lung sections were stained by PAS staining and analysed. (a) Non-Asthma group (n = 7), (b) Control-Asthma group (n = 7), and (c) 20 µL Lvn-Asthma group (n = 7). The number of mucus-positive cells per mm of basement membrane (d) and PAS-stained area per mm of basement membrane (e) were measured in PAS-stained sections. BM; basement membrane. Scale bar indicates 100 µm. *p < 0.05, **p < 0.01, ***p < 0.001, and ****p < 0.0001. Data are represented as mean ± SEM.

Note

The effects of NF- κ B were verified in research by other groups and not Tomoe Ueno-Iio.

Publication and Affiliation

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