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HERBCLIPTM

FILE: · Lavender (*Lavandula* spp.)

DATE: June 30, 2000

HC 011103

RE: Lavender Oil's Antispasmodic Activity

Lis-Balchin, A., and S. Hart. Studies on the mode of action of the essential oil of lavender (*Lavandula angustifolia* P. Miller). *Phytotherapy Research*, 1999; Vol. 13, pp. 540-542.

Lavender oil is used in aromatherapy. It is thought to be a holistic relaxant that prevents and eliminates gas formation (carminative and antifatulent), and prevents spasm of the colon (colic). Also, lavender produces sedation after it is inhaled. *In vitro* guinea-pig studies show that lavender causes an initial spasm of the ileum (part of the small intestine) followed by an inhibition of spasm. The researchers hypothesize that lavender-induced relaxation of the guinea-pig ileum *in vitro* may correlate with the holistic relaxant effect of lavender on humans. Therefore, the aim of the study was to determine the mechanism of action of lavender oil in guinea-pig smooth muscle *in vitro*, and relate the mechanism to the effect of lavender in humans.

Isolated sections of guinea-pig ileum were placed in an organ-tissue bath apparatus to monitor changes in muscle tension. Electrical stimulation applied to the ileum contracted the tissue and then lavender oil (supplied by Butterbur and Sage, Reading, England) was diluted and added to the baths to cause ileum relaxation. Other pharmacological compounds were also added for further analysis of the mechanism of action.

The researchers found that relaxation induced by lavender oil was unaffected by an adrenoceptor blockade. Also, they found that lavender oil was probably not acting as a calcium channel blocker or a direct potassium channel activator. However, lavender oil and linalool, the major component of lavender, potentiated the relaxant effect of phosphodiesterase inhibitors. This indicates that the effect may be mediated through a rise in intracellular cAMP via receptor stimulation or a direct action on adenylate cyclase.

The spasmolysis (relaxation) of smooth muscle *in vitro* can be directly correlated with the chemical components in the lavender oil. High percentages of alcohols, aldehydes, esters, ketones, and sesquiterpenes favor the spasmolytic effect. This also correlates with the relaxant effect in humans. Lavender has 38% linalool and 42% linalyl acetate, which favor spasmolysis. The authors conclude that there is a strong indication that lavender oil or linalool,

mediates spasmolytic action via a rise in intracellular cAMP. However, they say that the precise mechanism remains unclear. The mode of action appears to resemble that of peppermint oil (*Mentha piperita*) and geranium oil (*Pelargonium* spp.).

In mice, lavender oil and linalool may act at the central nervous system (CNS) and act on the neuromuscular junction. In *in vivo* dog studies, lavender oil diluted with water causes an increase in intestinal muscle tone, rhythmic contractions, and peristalsis (involuntary wavelike movement of the intestine). This is in contrast to the effect seen in guinea-pigs. The divergent effects maybe related to interspecies differences or to procedural differences—*in vivo* vs. *in vitro*. It remains to be seen whether the guinea-pig *in vitro* effects can be appropriately correlated with the effects in humans.

—Heather S. Oliff, Ph.D.

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