Supplementation of essential oils in dairy cow diets

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Essentials oils are volatile aromatic compounds with an oily appearance extracted from plant materials typically by steam distillation. Traditionally, they have been used in dairy diets to modify ruminal microflora and alter rumen fermentation. Recent research; however, shows the implication of some essential oils on physiologic functions in the cows (immunity, oxidative stress, mineral transport, insulin regulation…) by activating transient receptor potential (TRP) channels. These are non-selective ion channels expressed on neurons, the intestines, the pancreas, immune cells, and other tissues, that integrate environmental physicochemical signals for homeostatic control.

Additionally, studies of ruminal epithelia in vitro reported recently that essentials oils enhance the transport of Ca$^{2+}$ and other cations (Na$^+$, NH$^{4+}$) across the epithelium. In order to further investigate this observation, German researchers
evaluated the effects of feeding a commercial blend of essential oils on calcium status and milk yield in lactating dairy cows.