

Scientists Confirm: Essential Oils Unrelated to Hormone Disruption

Epidemiological Research Debunks the Long-Held Myth That Lavender and Tea Tree Oils Cause Endocrine Disruption in Children.

Results of a study by Franklin Health Research Centre (USA) **conclusively rule out Tea Tree Oil as an endocrine disrupter.**

The results of this large prospective epidemiological study conducted in the USA conclusively rules out any purported links between Tea Tree Oil and breast development in young boys, a medical condition called gynecomastia, also known as premature thelarche in young girls.

Solid epidemiological evidence is now available and the results are clear: a paper, published by Hawkins *et al* in the International Journal of Pediatrics and Adolescent Medicine titled “**Prevalence of Endocrine Disorders Among Children Exposed to Lavender Essential Oil and Tea Tree Essential Oils**” has unequivocally confirmed that no such association with these Essential Oils exists. The authors stated: "This study provides evidence that lavender essential oil and tea tree essential oil are safe ingredients in formulations for personal care products used on children."

The authors concluded “The proposed links between these ingredients and endocrine disruption cannot be substantiated in epidemiological studies.”

The cross-sectional, prospective study was designed to identify the lifetime prevalence of endocrine disruption, including but not limited to prepubertal gynecomastia and precocious puberty, among children who are exposed to Lavender and Tea Tree essential oils, compared with the prevalence in the general population. A study cohort of 556 children, aged 2 to 15 years old was enrolled, powering the study’s statistical analysis above a 95% confidence interval of 2%.

The study confirmed the following:

1. Prevalence of endocrine disorders among children exposed to these ingredients (Tea Tree and Lavender) is consistent with the general population and proposed links between these ingredients and endocrine disruption cannot be substantiated in an epidemiological study.
2. Warnings raised by Henley, Ramsey, Diaz, and Korach (National Institute of Environmental Health Sciences) in publications since 2007 purporting the link between endocrine disruption and essential oils (and their individual constituents) were premature, caused undue concern, and erroneously misled the medical community and countless concerned parents.

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LINKS TO PAPERS AND PRESS RELEASES

1. Henley et al (2007) "*Prepubertal gynecomastia linked to lavender and tea tree oils*": <https://pubmed.ncbi.nlm.nih.gov/17267908/>
2. Carson et al (2014) "*Lack of evidence that essential oils affect puberty*": <https://pubmed.ncbi.nlm.nih.gov/24556344/>
3. Diaz et al (2016) "*Prepubertal gynecomastia and chronic lavender exposure: report of three cases*": <https://pubmed.ncbi.nlm.nih.gov/26353172/>
4. Ramsey et al (2018) "*Essential Oils and Health*": <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7309671/>
5. Hawkins et al (2020) "*The relationship between lavender and tea tree essential oils and pediatric endocrine disorders: A systematic review of the literature*": <https://www.sciencedirect.com/science/article/abs/pii/S0965229919316760>
6. Hawkins et al (2021) "*Prevalence of endocrine disorders among children exposed to Lavender Essential Oil and Tea Tree Essential Oils*": <https://www.sciencedirect.com/science/article/pii/S2352646721000855>
7. AgriFutures Australia: "*Study confirms Australian tea tree oil is a safe ingredient for personal care products*" <https://agrifutures.com.au/news/tea-tree-oil-safe-ingredient-personal-care-products/>

Key Data

- TTO inhibited 50% of plaque formation at concentrations of 0.0009% for HSV-1 and 0.0008% for HSV-2, relative to controls
- The minimum effective in vitro concentration to kill some viruses is 0.125%
- Air dispersion through a TTO treated filter can totally inactivate tested viruses at 15 minutes
- TTO at a concentration of 0.02% prevented tested viruses from entering the host cell which helps prevent viral replication

Common Uses of TTO in the Current Environment

1. Hand sanitisers – formulations with around 70% alcohol and 5-10% TTO are most common. The ethanol evaporates quickly while the TTO remains much longer on the skin potentially providing additional protection through its antimicrobial efficacy.
2. Vaporisers or HVAC inserts – many homes and offices are choosing to use tea tree oil in a vaporiser unit or in an air conditioning unit to provide potential protection from airborne viruses and other microorganisms.
3. Surface cleaning products – formulations with tea tree oil are proving popular for spraying on and wiping down surfaces. We have received many anecdotal reports of tea tree oil being added to daily cleaners to provide the additional potential protection against microorganisms.

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Background

The benefits and potential of 100% pure Australian tea tree oil (an essential oil distilled from plantations of *Melaleuca alternifolia*) have been recognised for more than 70 years. Pure Australian tea tree oil is a natural essential oil and natural antiseptic, world renowned for its purity and quality. Tea tree oil has recognised antiseptic, anti-bacterial, anti-fungal, anti-inflammatory and anti-viral properties and is widely formulated into many cosmetic and personal care products including shampoos, creams, gels, acne control face-washes, hand-washes, vaginal pessaries, mouth-washes and other dental care products as well as being used as a topical antiseptic in its pure form on cuts, abrasions and insect stings. 100% pure Australian tea tree oil has also recently demonstrated new and exciting potential efficacy in the control of Golden Staph (*Staphylococcus aureus*) for both Methicillin (MRSA) and Vancomycin (VRSA) resistant strains. Further information and details of published research on MRSA control is available HERE demonstrating that TTO is more effective than chlorhexidine and Triclosan in clearing MRSA from superficial skin sites and wounds.

All ATTIA members subscribe to and support the ATTIA Code of Practice to ensure that quality standards as well as sound environmental practices are adhered to throughout the supply chain. In Australia the home of premium-quality tea tree oil, ATTIA Ltd is a not-for-profit organisation formed in 1986 as the peak body to promote and represent the interests of the Australian tea tree industry from the grower/producer of Australian tea tree oil, through to the manufacturer of off-the-shelf products for public use. In doing this, ATTIA aims to develop a stable, cohesive, environmentally friendly and internationally competitive tea tree oil industry producing quality assured tea tree oil that meets or exceeds international standards.

The Australian tea tree industry is one of the most environmentally aware and was also one of the first to adopt a policy that broadly embraces the principals of the ISO14000 environmental standards. ATTIA members must abide by this policy's stringent guidelines for the responsible production of clean, green tea tree oil and tea tree oil products. The composition of tea tree oil produced and marketed by all ATTIA members is determined by ISO 4730 (2004) and AS 2782-2009 Australian Standards [Oil of Melaleuca, terpinen-4-ol type].

Adulteration of pure TTO has recently been identified as a major issue with up to 50% of commercial samples tested being identified as adulterated to varying levels using a new method called **Chiral Purity Testing** as shown in the image below, there is more information on quality assurance, adulteration and the Code of Practice available HERE.

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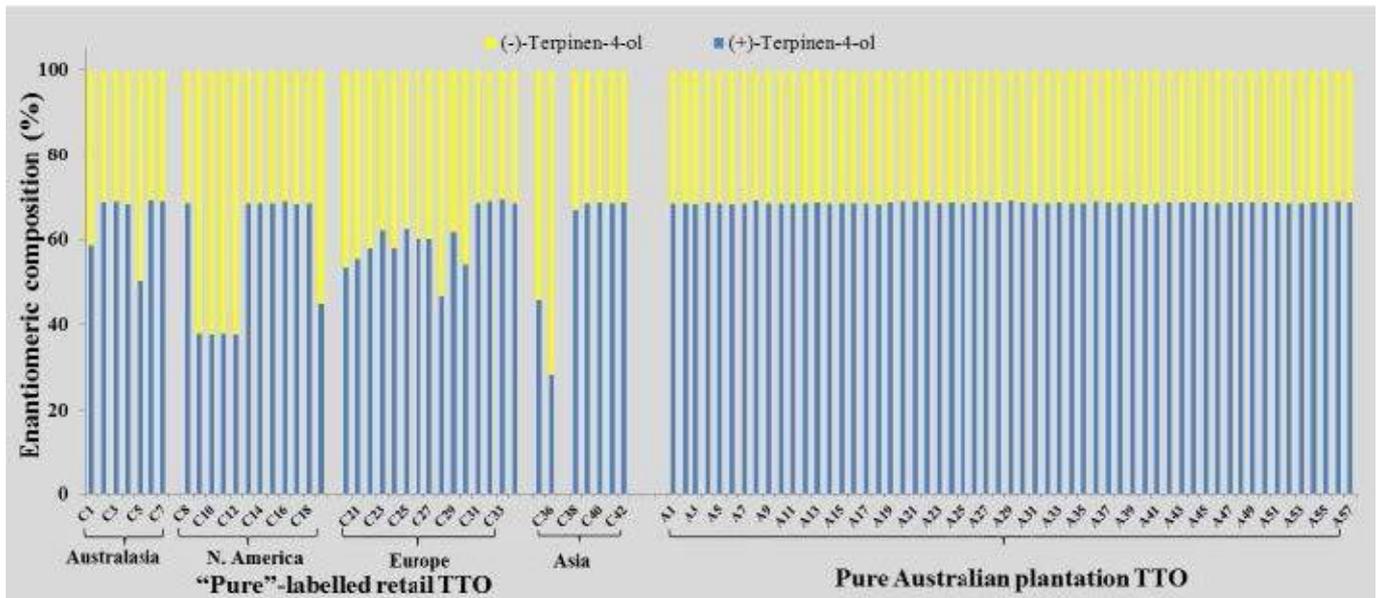
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ATTIA continuously liaises with government and regulatory bodies in Australia and overseas and coordinates national industry-sponsored research. ATTIA also researches and compiles data on all aspects of tea tree oil production, manufacture and marketing and encourages all members to access this resource as required.

ATTIA's board of directors is comprised of individuals who bring to their role a diversity of skills and experience. This ensures a comprehensive skill-set that can best represent our members.

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