Engineering and Product Testing a Novel Effective Antiperspirant

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There is an increasing consumer demand for effective natural products with fewer synthetic chemicals. In the United States, antiperspirants and deodorants are very common hygiene items used by most Americans. They are used to block sweat and reduce smell in the axillary region. The purpose of this experiment was to evaluate the ability of oregano essential oil (OES) to inhibit the growth of Escherichia coli. Various other ingredients and combinations were tested for their ability to inhibit Escherichia coli. This data was then used to formulate an antiperspirant that was product-tested by subjects to evaluate skin redness, rashing, and itchiness. Aluminum chlorohydrate (AC), a commonly used substance in commercial antiperspirant products, suppressed the most E. coli with an average inhibition ring of 17 mm. This was significantly larger than OES at 2.3 mm (p=.0001). The second most effective product was a combination of oregano essential oil and vanilla fragrance with an average inhibition ring of 8.8 mm. Four OES blends showed significantly greater bacterial inhibition (p=.0001) supporting the validity of using OES as an alternative active ingredient for the novel engineered antibacterial deodorant. The engineering goal of creating an oregano essential oil-based product that would not cause any major skin irritation was achieved. In the first phase of product testing, subjects reported no itchiness, redness, or rashing. Future in vivo testing is needed to determine this product’s viability of reducing bacterial growth in the underarm.

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