

Antimicrobial Properties of Organic vs. Conventional Teas of Sri Lanka

R. W. W. K. A. D. Rajapaksha^{1(*)}, K. D. K. Wanasinghe², W. M. R. S. K. Warnasooriya¹, D. I. D. S. Benaragama¹

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¹Department of Plant Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka, ²Amazon Trading (pvt) Ltd., 257, Siri Dhamma Mawatha, Colombo 10, Sri Lanka

(*)Email: kushaniakshala@gmail.com

Tea has recently received the attention of pharmaceutical and scientific communities due to its beneficial effects on human health. Aforesaid benefits are attributed to the major chemical constituent, polyphenols with potent antimicrobial properties. The concentration and activity of polyphenols are highly dependent on environmental conditions as well as crop management systems. In Sri Lanka, tea is grown in six agro ecological regions either as conventional or organic management. The objective of this was to determine the effects of tea production system and the growing region on polyphenol content and antimicrobial properties of tea. Fresh leaf samples collected from randomly selected tea estates each for organically certified and conventional from five major tea growing regions in Sri Lanka were manufactured into CTC black tea using a miniature system. Polyphenol content was assessed by ISO 14502: PART1:2005E standard method, while the anti-bacterial and anti-fungal properties were evaluated using disk diffusion technique against *Escherichia coli* ATCC 25922 and clinical pathogen of *Aspergillus niger*. Polyphenol content, anti-bacterial and anti-fungal properties were significantly different ($p < 0.05$) between the tea production systems and among the growing regions, where organic tea had higher polyphenol content, anti-bacterial and anti-fungal properties than conventional teas. Southern region tea had greater anti-bacterial and anti-fungal properties probably due to the high polyphenol content. In conclusion, this study provides some initial evidences of organically managed teas having better pharmaceutical properties over the conventionally grown teas.

Keywords: Polyphenol, anti-bacterial, anti-fungal, conventional tea, organic tea