Review Form 3

Journal Name:	**Archives of Current Research International**
Manuscript Number:	**Ms_ACRI_127017**
Title of the Manuscript:	**Simultaneous Extraction, Purification, and HPLC gradient quantification of Polyphenols, Caffeine, and Theophylline from the leaves of BB35 Green tea variety of Kenya cultivar**
Type of the Article	**Phytochemistry**

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PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	**Research on simultaneous extraction, purification, and quantification of polyphenols, caffeine, and theophylline from BB35 Green tea leaves (Kenya cultivar) using HPLC with gradient quantification has significant importance in various fields:** **Food Science and Nutrition:** **1. Quality control: Ensures consistent phytochemical composition and quality of green tea products.** **2. Nutritional labeling: Accurate quantification of bioactive compounds for labeling and consumer information.** **3. Functional food development: Understanding polyphenol and xanthine alkaloid profiles for designing functional foods.** **Pharmaceutical and Medical Research:** **1. Bioactive compound discovery: Identifying potential therapeutic agents from green tea extracts.** **2. Antioxidant activity: Investigating polyphenol-mediated antioxidant effects for disease prevention.** **3. Drug-herb interactions: Studying potential interactions between green tea compounds and pharmaceuticals.** **Agricultural and Environmental Science:** **1. Crop improvement: Understanding phytochemical variation in different cultivars and growing conditions.** **2. Environmental impact: Investigating effects of climate, soil, and agricultural practices on phytochemical composition.** **3. Sustainable production: Optimizing cultivation and processing methods for improved yield and quality.** **Economic and Trade Importance:** **1. Market authentication: Verifying authenticity and quality of green tea products for trade and commerce.** **2. Standardization: Establishing standards for green tea phytochemical composition and quality.** **3. Economic growth: Enhancing Kenyan tea industry competitiveness through research-driven quality improvement.** **Methodological Advancements:** **1. HPLC method development: Refining gradient quantification techniques for complex phytochemical mixtures.** **2. Extraction and purification optimization: Improving efficiency and yield of bioactive compounds.** **3. Analytical reference standards: Establishing reference materials for future research and quality control.** **Potential Health Benefits:** **1. Antioxidant and anti-inflammatory effects**	

	2. Cardiovascular health and cancer prevention **3. Neuroprotective and anti-aging properties** **4. Immune system modulation** **By investigating the phytochemical composition of BB35 Green tea, researchers can:** **1. Enhance understanding of green tea's health benefits** **2. Inform evidence-based nutritional recommendations** **3. Support sustainable agricultural practices** **4. Contribute to the development of high-quality, phytochemical-rich food and pharmaceutical products.**	
Is the title of the article suitable? **(If not please suggest an alternative title)**	**May be changed.** Simultaneously extract, purify, and quantify polyphenols, caffeine, and theophylline from BB35 Green tea leaves (Kenya cultivar) using High-Performance Liquid Chromatography (HPLC) with gradient quantification	.
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	**It is ok but includes** **1. Summarize the study in a shorter format?** **2. Provide suggestions for future research directions?** **3. Elaborate on potential industrial applications?**	
Are subsections and structure of the manuscript appropriate?	**Yes**	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	**Scientific Correctness and Robustness:** **This manuscript demonstrates scientific robustness and technical soundness due to its:** **1. Well-defined research objective, clearly outlining the novelty of the simultaneous extraction technique.** **2. Rigorous methodological approach, employing a standardized solvent mixture (60% water, 40% ethanol) and validated analytical techniques (HPLC-UV/PDA, Folin-Ciocalteu Reagent Method).** **3. High extraction efficiencies (94-95%) and precise quantification of target compounds (caffeine, theophylline, polyphenols).** **4. Use of internationally recognized standards (ISO 14502-1) for polyphenol content determination.** **5. Comprehensive reporting of compound concentrations, retention times, and stability verification.** **Technical Soundness:** **The manuscript showcases technical soundness through:** **1. Appropriate selection of analytical techniques (HPLC-UV/PDA) for compound separation and quantification.** **2. Optimal chromatographic conditions (fixed wavelength, 280 nm) for detection.** **3. Suitable solvent mixture and extraction protocol for efficient recovery of target compounds.** **4. Adequate validation of the extraction method, ensuring reliability and reproducibility.** **Strengths:** **1. Clear and concise writing style.** **2. Well-organized structure and logical flow.**	

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	3. Inclusion of relevant scientific literature and standards. **4. Transparent reporting of methods, results, and limitations.** **Minor Suggestions:** **1. Consider including more detailed information on the green tea leaf material (e.g., cultivar, growing conditions).** **2. Provide additional context on the environmental benefits and scalability of the extraction method.** **3. Discuss potential applications and implications of the research in more depth.** **Overall, the manuscript demonstrates a thorough and systematic approach to developing a novel extraction technique, ensuring its scientific correctness and technical soundness.**	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**	**Sufficient, not required additional ref.**	
Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	Minor revision suggested , Good communication but English should be more scientific.	
Optional/General comments	May be accepted after a few correction.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

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