Optimization of Aroma and Taste of Moringa (Moringa Stenopetala) Leave Tea with Partial Replacement of Stevia (Stevia Rebaudiana Bertoni) Leaves

ABSTRACT

Herbal teas are gaining popularity and acceptance by consumers due to their health benefits and appealing sensory characteristics. The demand for moringa herbal tea currently increased in Ethiopia due to its nutritional and medicinal values. However, using moringa alone is difficult due to its poor sensory appeal and adding sugar to enhance the sensory has implications for health. The purpose of this study was to evaluate the phytochemical, antioxidant and sensory properties of herbal tea formulated from dried leaves of moringa and stevia. The herbs were dried and characterized for their proximate and mineral contents. Seven moringa-based herbal teas were brewed with stevia ranging from 0 to 35% with fivelevel (5) and compared for their phytochemical, antioxidant and sensory properties. The moringa tea infusion and commercial green tea were considered as a control. The results showed that moringa had higher level of crude protein, crude fat and total ash content when it compared to the dried stevia leave, while stevia had higher carbohydrates. Moringa was higher in sodium, magnesium and calcium contents when compared with dried stevia leave, whereas stevia was higher in potassium, zinc, iron, and manganese. Herbal tea brewed with 20-35% stevia in the formulation results in the highest phytochemicals (total phenolic, total flavonoid, and condensed tannin), antioxidant (DPPH scavenging capacity, ferric reducing power and total antioxidant activities) values comparable to 100%-moringa control. Descriptive sensory analysis showed that herbal tea brewed with 20-35% stevia in the formulation results in higher sweetness compared to 100%-moringa and green tea. This study provides evidence that adding stevia to moringa improves the sensory and nutraceutical properties without compromising its health-promoting compounds.

Biography

Presently, I'm working at the Ethiopian Institute of Agricultural Research, Wondo Genet Agricultural Research center as a Food Science and Nutrition Researcher II, and Process Representative under Food Science and Nutrition Research Directorate.

I did my Bachelor of Science degree in Food Science and post-harvest Technology at Hawassa University from 2008-2013 and graduated with a 3.5/4.0 GPA. In those five years of my stay at the university, I have learned multiple courses theoretically and practically. To further strengthen my theoretical and practical knowledge and skills I did an internship activity at Moha soft drink company. In addition to my academic activities, I was the student council representative of the university which I contributed to the smooth learning and teaching process as well as integration between students, academic lecturers, and the administrative personnel in the university. Besides, I was a member of different voluntary associations in the university such as a member of anti-corruption, ethics club, and voluntary association club. This gave me good knowledge, skills, and experiences to be an acritical and analytical thinker from different perspectives thus helping me to secure a good career opportunity.

After graduation, I have been employed at the Ethiopia Institute of Agricultural Research in 2013 and worked in a different position for almost 3 years. It was a challenge for me because I didn't have much experience but I managed to learn the experimental skills within a few months, start to propose different activities, and conduct laboratory activities, I sharpened my critical thinking and analysis as well as acquired advanced skills and techniques in the research area.

I obtained my master's degree in Food Science and Technology from Hawassa University and Graduated with a 3.8/4.0 GPA. During my study at the university, I gained a deeper knowledge of Food Science and Technology in advance, and my thesis project was "Evaluation of Antioxidant, Phytochemical and Sensory Property of Herbal Tea Formulated from Dried Moringa (Moringa stenopetala) and Stevia (Stevia rebaudiana Bertoni)". My aim throughout this project was to further deepen my interests in the complex work of new herbal tea formulation that has nutraceutical value and table sugar replacement for sweetness.

After completing my master's degree, I returned to my employer institution and I am working there up to date. I am also experienced in GC_MSD, UV-Vis spectrophotometers, and proximity analyzing equipment I have published around twelve journal articles. I have contributed to the quality of the Asian journal's publication and have got a certificate of excellence in reviewing. I'm very much fascinated by the research area I'm currently engaging in. Besides my common research work activities, I'm the representative of the food science and nutrition process of the research center. Working as the representative of the research case team I have got good experience and skills to manage human resources, research budget as well as research projects.

PUBLICATIONS LISTS

1. Effect of Drying Methods on Organoleptic Quality of Ginger (Zingiber Officinal) Tea
2. Effect of Rue Essential Oil on Chemical Composition, Microbiological and Organoleptic Quality of Ergo (Naturally Fermented Milk)
3. Phytochemical's Content of Herbal Teas Formulated from Dried Moringa (Moringa Stenopetala) and Stevia (Stevia Rebaudiana Bertoni) Leaves
4. Physico-Chemical Characteristics of Released and Improved Black Cumin (Nigella Sativa L.) Varieties
5. Physical Characteristics of the Essential Oil Extracted from Released and Improved Lemongrass Varieties, Palmarosa and Citronella Grass
6. Physical Characteristics of the Essential Oil Extracted from Released and Improved Spearmint Varieties, Peppermint and Japanese Mint
7. Evaluation of Dried Stevia (Stevia rebaudiana Bertoni) Leaf and its Infusion Nutritional Profile
8. Evaluation of Nutritional Properties of dried Moringa (Moringa stenopetala) Leaves and Dried Moringa Leaves Infusion
9. Antioxidant and Sensory Properties of Herbal Teas Formulated from Dried Moringa (Moringa Stenopetala) and Stevia (Stevia Rebaudiana Bertoni) Leaves
10. A Review on Mycotoxin in Dried Herbs
11. Effect of drying method and storage days on essential oil yield and quality of Rue (Ruta chalepensis) leaves
12. A Review on the Production and Uses of Herbal Teas