

Appendix 1: Recommended Daily Intake of mineral nutrients for adults:

To determine which wild fruit is best for each mineral based on the provided nutrient levels and standard recommendations, we can compare the nutrient levels from each fruit with the general daily recommended intake values for adults. Here's a brief analysis of each mineral and recommendation based on the given data:

Recommended Daily Intake of mineral nutrients for adults:

- a. **Iron (Fe):** 8-18 mg (varies by age, gender, and health status)
- b. **Sodium (Na):** $\leq 2,300$ mg
- c. **Magnesium (Mg):** 310-420 mg
- d. **Calcium (Ca):** 1,000-1,200 mg
- e. **Phosphorus (P):** 700 mg
- f. **Potassium (K):** 3,400-3,800 mg
- g. **Zinc (Zn):** 8-11 mg
- h. **Manganese (Mn):** 1.8-2.3 mg

Analysis of Each Fruit:

1. *Tamarindus indica*

- a. **Iron (Fe):** 27.56 mg – Excellent source (exceeds the upper range).
- b. **Sodium (Na):** 32.76 mg – Very low, safe and beneficial.
- c. **Magnesium (Mg):** 23.78 mg – Low, below the recommended intake.
- d. **Calcium (Ca):** 668.47 mg – Decent, but below the recommended daily intake.
- e. **Phosphorus (P):** 18.59 mg – Very low.
- f. **Potassium (K):** 362.73 mg – Low, below recommended levels.
- g. **Zinc (Zn):** 15.84 mg – Good source.
- h. **Manganese (Mn):** 1.36 mg – Adequate.

Recommendation: *Tamarindus indica* is a good source of Iron and Zinc but lacks in Magnesium, Calcium, Phosphorus, and Potassium.

2. *Adansonia digitata*

- a. **Iron (Fe):** 12.50 mg – Good source.
- b. **Sodium (Na):** 35.66 mg – Low.
- c. **Magnesium (Mg):** 23.84 mg – Low.
- d. **Calcium (Ca):** 613.77 mg – Good but below the recommended intake.
- e. **Phosphorus (P):** 18.96 mg – Very low.
- f. **Potassium (K):** 922.93 mg – Low but better than others.
- g. **Zinc (Zn):** 1.60 mg – Low.
- h. **Manganese (Mn):** 0.70 mg – Low.

Recommendation: *Adansonia digitata* provides moderate Iron and Calcium but is low in most other minerals.

3. *Akocanthera schimperi*

- a. **Iron (Fe):** 162.78 mg – Extremely high (far exceeds the upper range).
- b. **Sodium (Na):** 487.26 mg – Moderately high, should be monitored.
- c. **Magnesium (Mg):** 632.98 mg – Excellent source.
- d. **Calcium (Ca):** 281.77 mg – Low, below the recommended intake.
- e. **Phosphorus (P):** 448.70 mg – High, well above the requirement.
- f. **Potassium (K):** 407.73 mg – Low.
- g. **Zinc (Zn):** 52.83 mg – Excellent source.
- h. **Manganese (Mn):** 32.48 mg – Extremely high.

Recommendation:

4. *Vitex doniana*

- a. **Iron (Fe):** 85.62 mg – High (exceeds the upper range).
- b. **Sodium (Na):** 270.62 mg – Moderate.
- c. **Magnesium (Mg):** 287.68 mg – Good source.
- d. **Calcium (Ca):** 1127.67 mg – Excellent source.
- e. **Phosphorus (P):** 316.40 mg – Good source.
- f. **Potassium (K):** 3658.24 mg – Excellent source.
- g. **Zinc (Zn):** 2.88 mg – Low.
- h. **Manganese (Mn):** 0.55 mg – Low.

Recommendation: *Vitex doniana* provides high levels of Calcium and Potassium and is also a good source of Magnesium. It has high Iron but lower levels of Zinc and Manganese.

Summary Recommendations:

- a. **For Iron:** *Akocanthera schimperi* and *Vitex doniana* are high, but *Akocanthera* has the highest.

- b. **For Sodium:** All fruits are low in Sodium, which is beneficial.
- c. **For Magnesium:** *Akocanthera schimperi* and *Vitex doniana* are good sources.
- d. **For Calcium:** *Vitex doniana* is the best source.
- e. **For Phosphorus:** *Akocanthera schimperi* is highest.
- f. **For Potassium:** *Vitex doniana* is the best source.
- g. **For Zinc:** *Akocanthera schimperi* is the best source.
- h. **For Manganese:** *Akocanthera schimperi* is extremely high, while others are lower.

Based on this comparison:

- a. ***Akocanthera schimperi*** is best for Iron, Magnesium, Zinc, and Phosphorus but should be used with caution due to high Manganese.
- b. ***Vitex doniana*** excels in Calcium and Potassium and is a good overall choice with balanced nutrients.
- c. ***Tamarindus indica*** and ***Adansonia digitata*** are less balanced but can still be included for specific nutrients like Iron.

Appendix 2: Compared suitability proximate and vitamins level of four fruits for human consumption

To evaluate the suitability of the listed wild fruits for human consumption, we'll examine their nutritional composition and compare it with general dietary standards. Here's a breakdown of each fruit's composition based on the provided data:

1. *Tamarindus indica* (Tamarind)

- a. **Moisture:** 68.60%
- b. **Ash:** 3.60%
- c. **Crude Protein:** 3.20%
- d. **Crude Fat:** 1.74%
- e. **Crude Fibre:** 3.33%
- f. **Vitamin B9:** 2.24 µg/g
- g. **Vitamin A:** 4.60 µg/g
- h. **Vitamin C:** 170.58 mg/100g
- i. **Carbohydrate:** 20.78%

Suitability: Tamarind is high in Vitamin C, which is beneficial for immune function and skin health. It also provides a moderate amount of carbohydrates and fiber. Its moisture content is quite high, which may contribute to its perishable nature. Overall, tamarind is suitable for consumption and provides valuable nutrients, especially Vitamin C.

2. *Adansonia digitata* (Baobab)

- a. **Moisture:** 77.90%
- b. **Ash:** 8.85%
- c. **Crude Protein:** 12.37%
- d. **Crude Fat:** 1.50%
- e. **Crude Fibre:** 8.17%
- f. **Vitamin B9:** 11.05 µg/g
- g. **Vitamin A:** 9.63 µg/g
- h. **Vitamin C:** 210.38 mg/100g
- i. **Carbohydrate:** 45.64%

Suitability: Baobab has a high Vitamin C content and is rich in fiber and protein. Its carbohydrate content is also significant, making it a good energy source. The high moisture content suggests it might be more perishable, but its nutritional profile indicates it is highly beneficial and suitable for consumption.

3. *Akocanthera schimperi*

- a. **Moisture:** 42.33%
- b. **Ash:** 4.81%
- c. **Crude Protein:** 3.53%
- d. **Crude Fat:** 2.51%
- e. **Crude Fibre:** 15.4%
- f. **Vitamin B9:** 2.44 µg/g
- g. **Vitamin A:** 8.17 µg/g
- h. **Vitamin C:** 120.70 mg/100g
- i. **Carbohydrate:** 34.90%

Suitability: This fruit has a relatively high fiber content and decent levels of Vitamin C and protein. Its moisture content is lower compared to others, which could make it more durable. Its nutritional profile is good, but the relatively low Vitamin C content compared to tamarind and baobab could be a downside.

4. *Vitex doniana*

- a. **Moisture:** 12.68%
- b. **Ash:** 9.30%
- c. **Crude Protein:** 10.9%
- d. **Crude Fat:** 21.40%
- e. **Crude Fibre:** 1.20%
- f. **Vitamin B9:** 12.64 µg/g
- g. **Vitamin A:** 0.43 µg/g
- h. **Vitamin C:** 43.65 mg/100g
- i. **Carbohydrate:** 32.44%

Suitability: *Vitex doniana* has the lowest moisture content and the highest crude fat content, which may be less desirable for some dietary preferences. Its Vitamin C content is lower than the other fruits, and the very low fiber content could limit its digestive benefits. However, it provides a good amount of protein and carbohydrates.

Summary

- a. **Tamarind:** Good for Vitamin C; moderate in other nutrients; high moisture might affect shelf life.
- b. **Baobab:** High in Vitamin C, protein, fiber, and carbohydrates; highly nutritious and suitable for consumption.
- c. ***Akocanthera schimperi*:** Decent fiber and Vitamin C; lower moisture may aid in storage.
- d. ***Vitex doniana*:** High fat content and low moisture; less desirable for fiber and Vitamin C but provides good protein and carbs.

Recommendation:

- a. **Baobab (*Adansonia digitata*)** appears the most balanced and nutritionally rich, making it highly suitable for consumption.
- b. ***Tamarindus indica*** is also suitable due to its high Vitamin C content and moderate nutrient profile.
- c. ***Akocanthera schimperi*** is acceptable but has slightly lower Vitamin C compared to tamarind and baobab.
- d. ***Vitex doniana*** might be less suitable due to its high fat content and low fiber, though it can still be consumed in moderation

Appendix 3: Mature fruits of studied species with their English names in the blackets.



1 *Tamarindus indica* (Tamarind)

2 *Akocanthera schimperi* (Schimper's Oleander)



3. *Adansonia digitata* (Baobab)

4. *Vitex doniana* (Black Plum)