



# The natural radioactivity in some tropical fruit juices in Lapai metropolis by gross alpha and gross beta measurements

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## 1 ABSTRACT

The lack of adequate consumption of fruit has become a worldwide dietary concern since fruits play a pivotal role in attaining and maintaining good health. Assemblage of radionuclide's pollutant through ingestion in fruit juices may lead to some health hazards. One hundred and twenty juice samples obtained from eight different fruits; *Musa sapientum* (banana); *Mangifera indica* (mango); *Citrullus lanatus* (watermelon); *Musa paradisiaca* (plantain); *Carica papaya* (pawpaw); *Ananas comosus* (pineapple); *Citrus sinensis* (orange) and *Malus domestica* (apple) consumed in Lapai metropolis in Niger State, Nigeria, were analyzed for radionuclide contaminant by means of Alpha/Beta counting system (Canberra iMatic<sup>TM</sup>). The average activity concentrations of gross  $\alpha$  in the juice samples varied in a range of  $1.96\text{E}+01 \pm 3.77\text{E}+00$  mBq/L in *Carica papaya* juice to the lowest of  $4.39\text{E}-01 \pm 4.73\text{E}-02$  mBq/L in *Ananas comosus* juice with a corresponding average annual committed effective dose of  $6.44\text{E}-01$  mSv/year and  $1.45\text{E}-02$  mSv/year respectively. For the gross  $\beta$ , the average activity concentrations varied in a range of  $5.10\text{E}+02 \pm 3.90\text{E}+00$  mBq/L for *Malus domestica* to  $9.16\text{E}+00 \pm 9.19\text{E}-01$  mBq/L for *Ananas comosus* with a correspond average annual committed effective dose of  $6.28\text{E}-01$  mSv/year and  $1.45\text{E}-02$  mSv/year respectively. This variation may be attributed to geological factors of the region where the fruits are cultivated. The gross  $\alpha/\beta$  activity values were low compared to the Food and Drug Administration (FDA) of 2004 limit of 100 mBq/L for gross  $\alpha$  and 1000 mBq/L for gross  $\beta$  in beverages. These results show that the consumption of the fruit juices may not pose any significant radiological health hazards through ingestion to the consumers.

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