

DRUG-PHYTOCHEMICAL INTERACTIONS: AN UNUSUAL IMPEDIMENT TO ACETAMINOPHEN ABSORPTION BY PHYTOCHEMICALS OPENS UP NEW CONCERNS FOR ITS SAFETY

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Abstract

Aim This study was aimed at evaluating the impact of phytochemicals of *Aframomum melegueta* (Alligator pepper; AM) seeds on the bioavailability of acetaminophen (N-acetyl-p-aminophenol; APAP) and amlodipine. **Methods** The everted intestinal sac model was used to assess the transfer of Acetaminophen and amlodipine across the GIT wall. A portion of the GIT was excised, everted, filled with physiological solution with both ends ligated to make a closed loop, and immersed in a beaker containing a concentration of the test drug either alone or in the presence of AM seed extract (AMSE). After a period of time to achieve transfer equilibrium, the everted tissues were removed, blotted dry on an absorbent paper and drained into a test-tube. The concentration of the test drug was determined in these serosal fluids to assess transfer efficiency. **Results** The seed extract severely inhibited the intestinal transfer of acetaminophen by as much as 82.4% while amlodipine transfer was enhanced up to 94.5%. Serosal concentration of acetaminophen in the absence and presence of AMSE were $7.62 \pm 0.95 \mu\text{g ml}^{-1}$ and $1.34 \pm 0.96 \mu\text{g ml}^{-1}$ ($P < 0.001$), while that for amlodipine were $2.54 \pm 1.03 \mu\text{g ml}^{-1}$ and $4.94 \pm 0.739 \mu\text{g ml}^{-1}$ respectively. **Conclusion** The depression of APAP transfer was suggested to be as a result of chemical interaction with nitric oxide produced by the interaction of the phytoestrogens in the extract on GPCR-bound estrogen receptor. This type of interaction may have serious health consequences.

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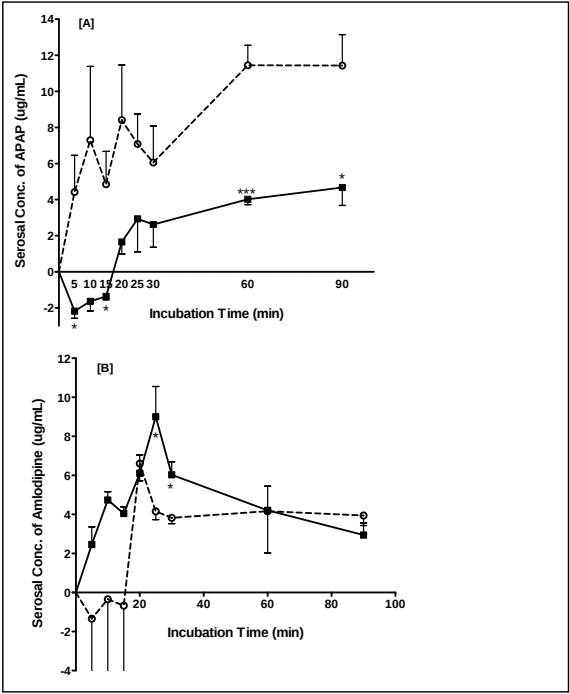


Figure 1.

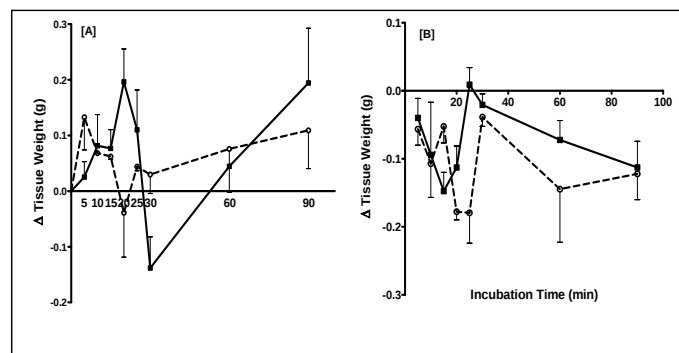


Figure 2.