

**E2-16 : POTENT SEED GERMINATION INHIBITORS FROM WILD
SUNFLOWER (*Tithonia diversifolia* HEMSL.) LEAVES**

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Wild Sunflower (*Tithonia diversifolia* L.) has been a common 'green manure' plant widely used in upland farming, Glasshouse studies and petri-dish based seed germination screening established that, in addition to promoting the growth of several crop-species, *Tithonia* leaf residues inhibited the growth of a number of weed species, suggesting potential allelopathic activity. Methanol extracts of *Tithonia* leaves were subjected to intensive activity directed fractionation in order to determine potential allelochemicals in them. The phytotoxic compounds were mostly found in the polar fraction of the extracts. Seed germination bioassays showed that inhibitory activity was mostly concentrated in the dichloromethane fraction, after partitioning of the methanol extract. The dichloromethane fraction was subjected to further fractionation guided by bioassays, using gel-filtration repeated column chromatography on silica gel and finally by HPLC. Potent seed germination inhibitors were isolated and characterized by spectroscopic methods, ^1H , ^{13}C -NMR, 2D-NMR (COSY, HMQC, and HMBC) and mass spectrometry. Two compounds were identified as 12 carboxy-3,6 dihydroxy 3,10- epoxy-8- isobutyroxy germacra - 11,(13)-ene -lactone (Tagitinin-A) (1) and 12 carboxy 6,10 dihydroxy-8-isobutyroxy- 3-oxogermacra-1,4, 11, (13) triene -lactone (Tagitinin-C), (2). These two compounds have been previously reported from *Tithonia tagitifolia* Desf. Two other new compounds, (3) and(4) were also found in the same fraction. This inhibitory action is thought to be due to the -lactone ring in the four compounds, which are found to occur in a mixture.

