

## Ethnomedicinal extracts of three Ghanaian plants attenuate oxidation in SC-1 fibroblasts, while perturbing cellular migration

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**Background:** Ethnomedicinal preparations have for many years served as medication for treatment of diverse diseases. These possess various pharmacologically-active phytochemicals which may be harnessed for the treatment of diseases such as wounds. This study investigated the ability of ethnomedicinal extracts prepared from *Aspilia africana* CD Adams, *Boerhavia diffusa* L. and *Erythrina senegalensis* DC. to alter reactive oxygen species (ROS) release and cellular migration in SC-1 fibroblasts as surrogate markers for wound healing.

**Methods:** Extracts were screened for major phytochemical classes using thin-layer chromatography and ultra-performance liquid chromatography coupled to time of flight mass spectrometry (UPLC-TOF-MS). Cytotoxicity in SC-1 fibroblasts was assessed using sulforhodamine B staining, and morphological examination via microscopy. The effect on AAPH-induced ROS release was measured using dichlorofluorescein diacetate activation. The effect on cellular migration was determined microscopically using the scratch wound method.

**Results:** Phytochemical classes such as alkaloids, flavonoids and phenols were identified in all three extracts. Chromatograms created using UPLC-TOF-MS showed the absence of ascorbic acid, and kaempferol, whilst traces of neobavaisoflavone was detected in *E. senegalensis*. None of the extracts was cytotoxic. *E. senegalensis* reduced intracellular ROS and cellular migration by 35% and 65% at 100 µg/mL, respectively.

**Conclusion:** Although *E. senegalensis* reduced oxidative stress, cellular migration was hindered. Free radicals are associated with activation of proliferative and migratory pathways, and thus may be implicated in the reduced migration observed. The latter may result in reduced wound healing. Further investigation is necessary to identify bioactive components, and elucidate the mechanistic pathways involved.