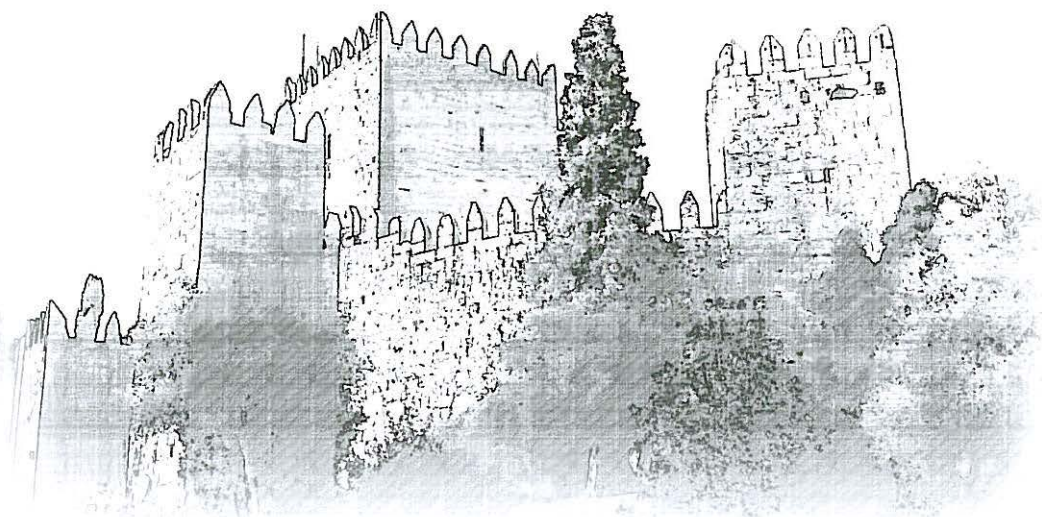


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# Book of Abstracts



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assays were, respectively: rutin ( $9.62 \pm 0.28$  and  $8.1 \pm 0.54$ ), EE ( $70.97 \pm 1.53$  and  $55.44 \pm 2.8$ ), HF ( $213.38 \pm 2.94$  and  $164.73 \pm 2.34$ ), DF ( $83.43 \pm 2.94$  and  $109.42 \pm 0.51$ ), AF ( $24.99 \pm 0.16$  and  $24.37 \pm 2.18$ ) and BF ( $52.28 \pm 3.07$  and  $57.33 \pm 1.92$ ). In the  $\beta$ -carotene bleaching assay, the percentage inhibition (%I) was: EE =  $51.02 \pm 1.92$ ; HF =  $82.17 \pm 1.62$ ; DF =  $71.21 \pm 1.07$ ; AF =  $73.65 \pm 0.75$  and BF =  $42.97 \pm 2.58$ . EE and fractions showed higher %I than rutin ( $5.82 \pm 0.81$ ), while EE and BF produced lower values than quercetin ( $64.08 \pm 2.13$ ). The bioautography data revealed that the antioxidant effect is due the presence of phenolic compounds, particularly flavonoids. These results suggest that *G. hirsutum* is an important and promising source of bioactive molecules with antioxidant action.

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**Keywords:** *Gossypium hirsutum*, Malvaceae, Antioxidant Activity, Flavonoids, Natural Products, Herbal Medicines

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## P1C11 *In vitro* study of the antifungal potential of *Glycyrrhiza glabra* L. against *Candida* species

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In the last two decades, an increasing incidence of opportunistic fungal infections has been observed, not only at hospital level but also in the community. *Candida albicans* was identified as the main responsible agent for those infections, but other non-*Candida albicans* *Candida* (NCAC) species have also been associated with this complicated medical condition [1]. Furthermore, higher rates of fungal resistance to the current drugs have been observed and are still growing, making the discovery of new active antifungal substances very urgent. Medicinal plants can be explored for that purpose. *Glycyrrhiza glabra* L. is commonly used in folk medicine due to its antimicrobial and antiviral activities, as well as for a wide variety of dermal affections [2]. Some reports have described the antimicrobial potential of licorice (*G. glabra* roots), namely aqueous extracts [e.g., 3]. Herein, the antifungal potential of the hydroalcoholic extract prepared from rhizomes and roots of *G. glabra*, was evaluated against 19 *Candida* strains, using the disc diffusion halo assay. The licorice extract was effective against all the tested *C. albicans*, *C. glabrata*, *C. parapsilosis* and *C. tropicalis* strains. It is very interesting to highlight the broad spectrum of activity of this extract, for which were observed similar results into different strains of the same species and even between different species. The results for the



inhibitory zones, at the tested concentration (50 mg/mL), after 24h, were 1.0-1.2 cm for *C. albicans* and *C. parapsilosis*, 1.0-1.3 cm for *C. tropicalis* and 1.2 cm for *C. glabrata*, maintaining the potential at 48h and even at 72h. This study demonstrates that *G. glabra* hydroalcoholic extract probably exerts mainly fungicidal and not so much fungistatic effects, and it could find applications in antifungal therapy. Nevertheless, further studies will be performed in order to characterize the extract, namely on phenolic composition, and to elucidate its mechanism of action.

**Keywords:** Antifungal activity; *Candida* species; Medicinal plants; *Glycyrrhiza glabra* L.;

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## P1C12 The comparison between the laxative effectiveness of *Cassia fistula* pod pulp extract and *Cassia angustifolia* in Thai constipated patients

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*Cassia fistula* L. is widely used in Thai folklore medicines for its various medicinal properties. The pulp of ripe pods possesses a mild, pleasant purgative action due to anthraquinone glycosides, the active laxative components. Although the pod has long been used for its laxative effect, no study has been performed to clinically prove its *in vivo* action. The objective of this randomized crossover, double blind, controlled trial was to compare the laxative effectiveness of *C. fistula* pod pulp extract to the popular laxative drug from *C. angustifolia* in patients with constipation. Thirty six Thai participants diagnosed with constipation based on Rome III Criteria [1] were randomized into 2 groups, the treatment group (n = 17) and the standard group (n = 19). The first group was assigned to have five days of treatment with the control drug, *Cassia angustifolia* commercial capsules, stop taking the drug for 5 days, and then take the sample drug of *C. fistula* pod pulp extract capsules for five more days. The second group received the same treatment but in a reversed order. Each patient received 8 capsules of drug before bed time every day and was asked to fill in a daily stool chart. Main outcome measurements included stool frequency and quantity, consistency, ease of evacuation, and adverse effects. In terms of laxative effectiveness of the two types of drugs, there was no significant difference between the two groups (p > 0.05). Taken into consideration of lower anthraquinone content (0.96 mg calculated as rehin) in *C. fistula* pod pulp than in *C. angustifolia* product (15 mg calculated as sennoside B), *C. fistula* should provide more laxative effectiveness than *C. angustifolia* if the doses of both drugs contained the equal amount of anthraquinone glycosides. Ethnologically, *C. fistula* pod has long been used as a laxative due to its safety and inexpensiveness, and therefore should be promoted as a commercial laxative drug just like senna.