# Bioactivity of natural compounds from some Egyptian higher plants:
# 1- Isolation, purification and some properties of antimicrobial compounds from romman (*Punica granatum*) peels

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**Amany L. Kansoh*, Sanaa T. El-Sayed and Etidal W. Jwanny**
* Microbial Chemistry Department and Biochemistry Department, National Research Center, Tahrir St, Dokki, Cairo, Egypt.

## ABSTRACT

*Romman peels, zaater leaves, garlic bulbs, helba seeds, habbit el baraka seeds, cabbage leaves and stems and red beet leaves, collected from Egypt, exhibit wide spectrum antimicrobial effects against Gram positive and Gram negative bacteria, yeast and fungi.*

*The most antimicrobial bioactive dry plant powders were romman peels, cabbage stems, red beet leaves, garlic bulbs and zaater leaves whereas, the least active plants were cabbage leaves, habbit el baraka and helba seeds. Water, ethanol (95%) and chloroform extracts of dried powdered romman peels, zaater leaves and cabbage stems were examined for their antimicrobial properties and phytochemical analysis. Water extract of romman peels showed the best antimicrobial effect (inhibited over 88 % of the tested microorganisms).*

*The dried water extract of romman peels was suspended in water and further extracted with chloroform. Only the aqueous layer exhibited antimicrobial activity. Gel chromatographic purification and thin layer separation isolated two antimicrobial fractions AII and B. Phytochemical analysis indicated that the romman fractions AII and B consist mainly of tannins (93 and 88%, respectively).*

*The minimum inhibitory concentration (MIC) of the purified romman peels extract AII was 0.6 to 0.82 mg/ml against Staphylococcus aureus, Escherichia coli, Candida albicans, Candida pseudotropicalis, Saccharomyces cerevisiae, Aspergillus niger and Mucor rouxii. It possessed quick bactericidal and fungicidal action after 24 and 48 h, respectively. The antimicrobial activity of AII was stable at a wide pH range with maximum stability at pH 4.0 to 6.0. Its heat stability was found to be at 37˚C for 25 h with 23 - 48% losses only. While at 50˚C, the antimicrobial activities were decreased by 35 -60% after 5 h and after 15 h all activities were completely lost.*

***Key words:*** *Punica granatum (romman) peel, tannins, antimicrobial activity.*