

الآية

قال تعالى:

بسم الله الرحمن الرحيم

اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ {1} نَسَانَ مِنْ عَلَقٍ {2} وَرَبُّكَ
الْأَكْرَمُ {3} عَلَّمَ بِالْقَلَمِ {4} نَسَانَ مَا لَمْ يَعْلَمْ {5}

صدق الله العظيم

سورة العلق الآيات من 1-5

Dedication

Dedicated to:

Our parents

Our Grand Father & Grand Mother

Our Brothers and Sisters

Our Best Friends

Our Teachers

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Abstract

Protocatechuic acid (PCA) is a type of widely distributed naturally occurring phenolic acid. PCA has structural similarity with gallic acid, caffeic acid, vanillic acid, and syringic acid which are well-known antioxidant compounds.

Isolated protocatechuic acid by Soxhlet *Instrument* from *H. sabdariffa* calyces in pure form, The IR (KBr disc) spectrum of protocatechuic acid (Fig.4.1.2) showed 3500 (OH). 2955.04, 2926.11 (C-H, Aliph). 1700 (COOH). 1454.02, 1431.23, 1367.58 (C=C, Ar), 804,678 cm^{-1} (C-H, Ar, bending).

Also Investigated its antimicrobial activities. Two gram-negative and two gram-positive bacterial strains, representing common human bacterial pathogens were used for the antibacterial screenings.

Protocatechuic acid inhibit common human bacterial pathogens were used for the antibacterial screenings. The gram-negative bacteria were *Escherichia coli* and *Pseudomonas aeruginosa*; the gram-positive were *Staphylococcus aureus* and *Bacillus subtilis*.

Also protocatechuic acid was unable to inhibit *Candida albicans* and *Aspergillus niger* which implies that they could not be used to treat fungal diseases.

المستخلص

حمض البروتوكاتشيك هو مادة تحتوي على حمض الفينوليك وله تركيب يشبه تركيب حمض الجاليك وحمض الكافيك وحمض الفانليك التي تعرف بأنها مركبات مضادة للأكسدة.

في هذه الدراسة تم فصل حمض البروتوكاتشيك على هيئة نقية بواسطة جهاز السكسوليت وأعطى هذه القيم عن طريق تقنية الأشعة تحت الحمراء (Fig.4.1.2) showed 3500 (OH). 2955.04, 2926.11 (C-H,Aliph). 1700 (COOH). 1454.02, 1431.23, 1367.58 (C=C, Ar), 804,678 cm^{-1} (C-H, Ar, bending)

وتم التحقق من فعالية حمض البروتوكاتشيك ضد الميكروبات باستخدام 2 جرام من البكتيريا السالبة (*Escherichia coli* and *Pseudomonas aeruginosa*) و2 جرام من البكتيريا الموجبة (*Staphylococcus aureus* and *Bacillus subtilis*).

كما أن البروتوكاتشيك لم يستطع تثبيط الفطريات.

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**Isolation and antimicrobial activities
of protocatechuic acid from *Hibiscus
sabdariffa* calyces**

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