Antibacterial Activity of *Cocos nucifera linn.*

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Accepted 27 February 2003
Revised 2 January 2003
Received 18 March 2002

Extracts of husk of *Cocos nucifera* Linn were investigated for antibacterial activity against *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Bacillus pumilus* and *Staphylococcus aureus* at 100 μg/disc using disc diffusion method. The chloroform and ethyl acetate extracts showed significant broad-spectrum antibacterial activity.

Cocos nucifera Linn (Coconut) is a plant belonging to the family Arecaceae distributed widely in tropical regions. Aqueous extract of dried husks of *C. nucifera* Linn is used for fractures and sprains[1]. Hot water extract of husk is used in dysmenorrhea, hot water extract[2] and alcoholic extract (EtOH)[3] of dried shell are reported to have antidiabetic and antifungal activity respectively. Seed oil is applied topically for scabies and ringworm infections[4]. In the light of above information an attempt was made to study the antibacterial activity of different extracts of *C. nucifera* husk.

The *C. nucifera Linn* husk (100 g) was macerated with methanol for 24 h and concentrated to one third of its volume. The concentrate was suspended in water (mother liquor), which was fractionated with solvent ether, chloroform and ethyl acetate basing on the increasing order of polarity. All extracts were distilled separately under reduced pressure to yield residues, which were completely free from solvents using a flash evaporator (Heidolph, Laborota 4000). Solvent ether extract (SEE)-1.8%, chloroform extract (CE)-1.6%, ethyl acetate extract (EAE)-2.2% and aqueous extract (AE)-5.8%. The residues were redissolved in dimethyl formamide (DMF) to evaluate antibacterial efficiency. Bacterial strains used for testing include, *Bacillus subtilis* (ATCC No. 6633), *Bacillus pumilus* (14884), *Staphylococcus aureus* (29737), *Escherichia coli* (8739) and *Pseudomonas aeruginosa* (25619).

Antibacterial activity of the extracts was tested using the disc diffusion method[5]. Sterile filter paper discs (6 mm diameter) containing 100 μg/disc of the plant extract were placed on the surface of the medium. DMF alone served as negative control. A disc containing the standard streptomycin (15 μg/disc) was used as positive control. Incubation

TABLE 1: ANTIBACTERIAL ACTIVITY OF DIFFERENT EXTRACTS OF *COCOS NUCIFERA* LINN.

Extracts 100 μg/disc	Diameter of the inhibition zone* (mm)				
	E. coli	*P. aeruginosa*	*S. aureus*	*B. subtilis*	*B. pumilus*
Chloroform	22	16	19	16	14
Ethyl acetate	19	11	17	14	11
Aqueous	7	6	9	6	6
Streptomycin (15 μg/disc)	30	25	27	26	24

*Size of the inhibition zone by disk diffusion method. All values are an average of four determinations.

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was done for 24 h at 37°. The assessment of antibacterial activity was based on the measurement of inhibition zone diameter formed around the disc. Four independent determinations were conducted for each extract is given in the following Table 1.

These results suggest the presence of an active principle (s) with good antibacterial potency of high concentration of a moderately active principle in the extract. The aqueous and methanolic extracts gave positive test for polyphenolics. Work is in progress on separation and structure elucidation of the compounds responsible for antibacterial action. This antibacterial activity would support the therapy of infections and traditional therapeutics of this plant.

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Estimation of Rofecoxib by Difference Spectroscopy in Pharmaceutical Formulations

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Accepted 24 March 2003

Revised 30 January 2003

Received 30 March 2002

Difference spectrophotometric method was developed for the estimation of rofecoxib in bulk drug and in pharmaceutical formulations. Rofecoxib exists in two different forms in acidic and basic medium which differs in their UV spectra. Difference spectrum, obtained by keeping rofecoxib in 0.1 N NaOH in reference cell and rofecoxib in 0.1 N HNO_3 in sample cell, showed two characteristic peaks at 219.2 nm and 260.8 nm with negative and positive absorbance respectively. Difference of absorbance between these two maxima was calculated to find out the amplitude, which was plotted against concentration. The method was found to be linear in the ranges of 2-16 μg/ml.

Rofecoxib[1] is described chemically as 4-[4-(methylsulfonyl) phenyl]-3-phenyl-2(5*H*)-furanone. Rofecoxib is comparatively a new non-steroidal antiinflammatory drug[2], which is active at a low dose[3]. Rofecoxib is not official in any of the pharmacopeia. Various methods for estimation of rofecoxib reported in literature are HPLC with post-column photochemical derivatization[4-5], reverse-phase HPLC[6], HPLC[7-9], HPLC with tandem mass spectrometry[10-11], LC[12], LC-MS[13-15], monolithic silica LC[16], fluorescence detection[17] and UV/vis spectrophotometry[18-19]. Not a single difference spectrophotometric method is reported in literature till date. So the objective of this study was to develop accurate, precise, sensitive, selective, reproducible and quick difference spectrophotometric methods for estimation of rofecoxib in pharmaceutical formulations. Difference method is more sensitive than simple UV method because the absorbances of the same concentration solutions at different maxima are going to be added to each other in the difference method. So amplitude of difference method is more as compared to absorbance of simple method for the same concentration of chromogen and makes method more sensitive. Rofecoxib exists in two different forms in acidic and basic medium which differs in their UV spectra. Difference spectrum, obtained by

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