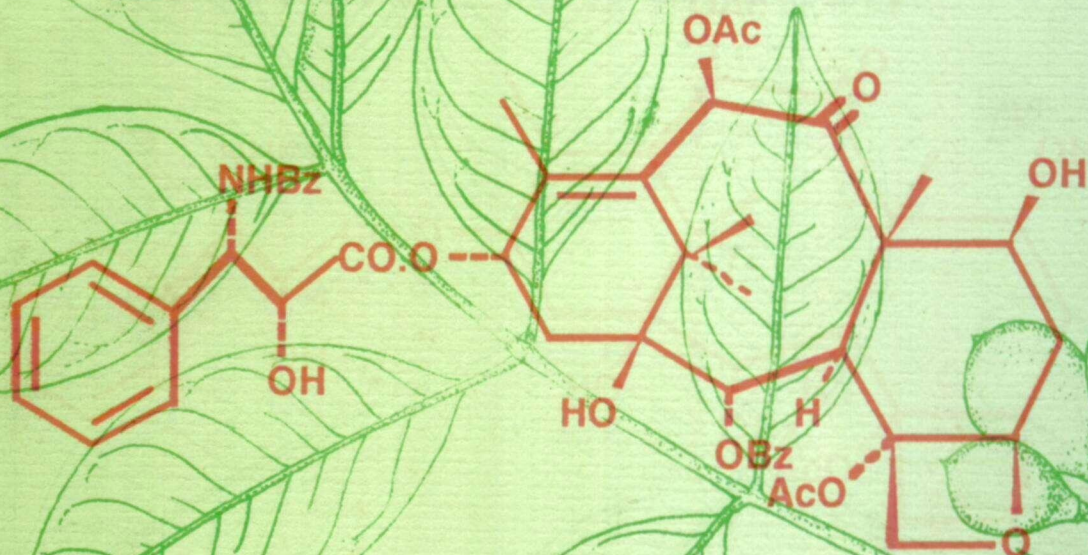


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sponsored

# *Symposium on Bioactive Natural Products*

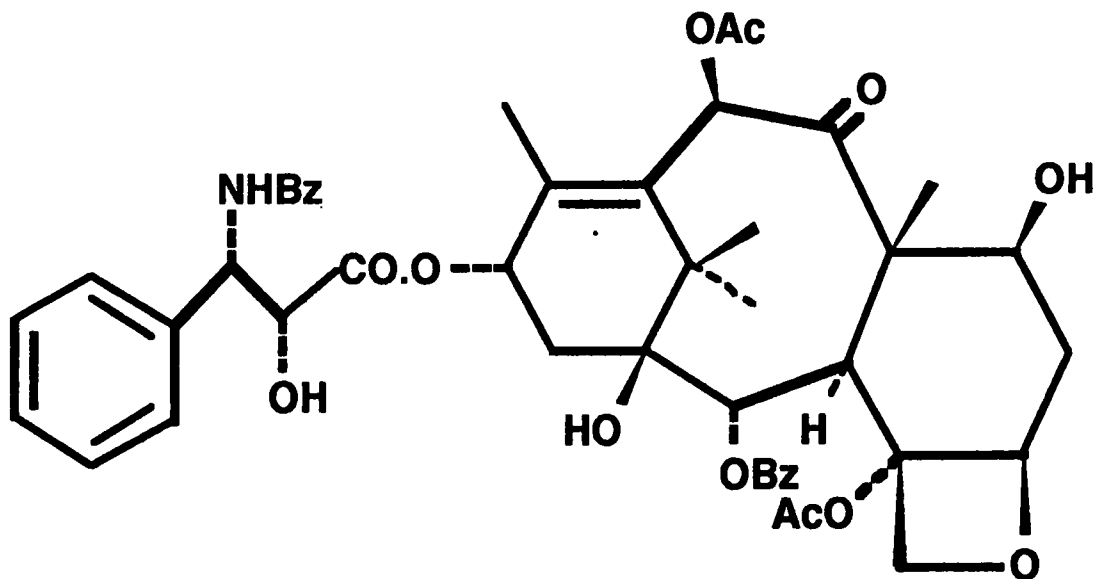


Organised by the Department of Chemistry,  
University of Peradeniya at the Hotel Tree of Life,  
Kandy, Sri Lanka. November 11-15, 1996

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sponsored

# *Symposium on Bioactive Natural Products*



## PROGRAMME FOR ACCOMPANYING PERSONS

*Organised by the Department of Chemistry,  
University of Peradeniya at the Hotel Tree of Life,  
Kandy, Sri Lanka. November 11-15, 1996*

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*Kandy, Sri Lanka, November 11-15, 1996*

## **ORGANISING COMMITTEE**

<b>Chairman:</b>	Professor G. P. Wannigama
<b>Symposium Co-ordinator:</b>	Professor Vijaya Kumar
<b>Members:</b>	Professor B. M. R. Bandara
	Dr. Veranja Karunaratne
	Professor Savitri Kumar
	Dr. Anura Wickramasinghe
	Dr. Mahinda Wickramaratne
	Dr. Swarna Wimalasiri
<b>Secretary:</b>	Ms. Achala Karunaratne

## **COMMITTEE - ACCOMPANYING PERSONS**

Professor N. Savitri Kumar (Chairperson)  
 Ms. Anjani M. Karunaratne  
 Ms. Chamalie Abeysekera  
 Ms. Rasika Mudalige  
 Ms. Achala Karunaratne (Secretary)

**ACKNOWLEDGEMENTS**

The Organizing Committee thanks the following institutions for their support.

Department for Research Cooperation, SAREC of the  
Swedish International Development Cooperation Agency, Sida, Stockholm  
Sweden.

International Program in Chemical Sciences,  
Uppsala University, Uppsala, Sweden.

International Foundation for Science, Stockholm, Sweden.

Natural Resources, Science and Energy Authority of Sri Lanka, Colombo.

University of Peradeniya, Peradeniya.

The Committee also wishes to thank the following for their kind assistance:

Professor C. M. Madduma Bandara, Vice-Chancellor and Mrs. Madduma  
Bandara

Ms. Anjani M. Karunaratne, Ms. Chamalie Abeysekera and Ms. Rasika  
Mudalige, Department of Botany, University of Peradeniya.

Dr. D. B. Sumithraarachchi, Director, National Botanic Gardens, Peradeniya.

Dr. A. R. Ariyaratne, Dr. R. O. Thattil and Professor Kapila Gunasekera,  
Faculty of Agriculture, University of Peradeniya.

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## **Programme for Inauguration of Symposium**

9.30 a.m. - Traditional Lighting of Oil Lamp

9.35 a.m. - Welcome Address -

Prof. R. P. Gunawardane  
*Dean, Faculty of Science*

9.45 a.m. - Address by Vice-Chancellor

Prof. C. M. Madduma Bandara  
*Vice-Chancellor, University of Peradeniya*

9.55 a.m. - Inauguration Address

Hon'ble Bernard Soysa  
*Minister for Science, Technology and Human  
Resources Development*

10.15 a.m. - Prof. M. U. S. Sultanbawa Felicitation Address

Prof. G. P. Wannigama

10.35 a.m. - Address

Prof. M. U. S. Sultanbawa

10.45 a.m. - Tea

11.15 a.m. - End of Inaugural Session

## **ACCOMPANYING PERSON'S PROGRAMME**

### **Monday, November 11, 1996**

- 9.30 - 10.45 a.m. Inauguration Ceremony
- 10.45 - 11.15 a.m. Tea
- 12.55 p.m. Lunch
- 3.05 p.m. Tea
- 3.20 p.m. Leave Hotel to Visit Royal Botanic Gardens,  
Peradeniya with scientific participants
- 4.00 p.m. Arrive at Royal Botanic Gardens, Peradeniya
- 6.00 p.m. Visit University of Peradeniya Campus
- 7.00 - 10.30 p.m. Dinner hosted by Professor C. M. Madduma  
Bandara, Vice-Chancellor, University  
of Peradeniya and Mrs. Madduma Bandara  
for participants and accompanying persons
- The Lodge, University of Peradeniya

### **Tuesday, November 12, 1996**

- 9.00 a.m. Leave for Elephant Orphanage, Pinnawela  
with Ms. Chamalie Abeysekera
- Lunch at Hotel at Elephant Orphanage
- 3.00 p.m. Return to Hotel
- 3.40 p.m. Tea
- 4.00 p.m. Visit to Kandy and the Temple of the Tooth
- 7.30 p.m. Return to Hotel for Dinner

*Symposium on Bioactive Natural Products***Wednesday, November 13, 1996**

- 9.00 a.m. Leave for Embekke, Lankatilleke and Gadaladeniya with Ms. Rasika Mudalige
- 12.55 p.m. Lunch at Hotel
- 4.00 p.m. Tea
- 6.30 p.m. Sri Lankan Traditional Dancing  
Hotel near Pool  
Sri Lankan Speciality Dinner

**Thursday, November 14, 1996**

- 9.00 a.m. Visit Tea Centre and Tea Factory with Mr. and Mrs. U. J. Karunaratne
- 3.00 p.m. Return to Hotel
- 3.15 p.m. Tea
- 3.40 p.m. Bus will leave for Kandy for those interested in visiting town. Bus will return from near Queen's Hotel at 5.45 p.m.
- 7.00 p.m. Symposium Dinner with Calypso Band

**Friday, November 15, 1996**

- 7.00 a.m. - Symposium Excursion to Dambulla, Sigiriya and Kandalama
- 7.30 p.m. - Return to Hotel

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## **LIST OF PARTICIPANTS**

### **BANGLADESH**

NAHAR, NILUFAR, PROF.

MOSIHUZZAMAN, M., PROF.

### **GERMANY**

BESTMANN, H. J., PROF. - Accomp. Person: MRS. H. J. BESTMANN

KRAUS, WOLFGANG, PROF.

### **INDIA**

BANERJI, ASOKE, DR.

HAZRA, BANASRI, DR.

MUKHERJEE, BISWAPATHI, DR.

SAHA, AHINDRA K., DR.

### **JAPAN**

FUSETANI, NOBUHIRO, PROF. - Accomp. Person: MICHIKO FUSETANI

### **NEPAL**

MANANDHAR, MANGALA, PROF.

### **SRI LANKA**

ABEYSINGHE, SARATH, DR.

ALAGESAN, KAYALVILI, MS.

ARAMBEWELA, LAKSHMI, DR.

BALASURIYA, B. M. CHAMPANI A., MS.

- BANDARA, B. M. R., PROF.
- BANDARA, K. A. N. PREMARATNE, MR.
- BANDARANAYAKE, NIVANDANA K., MR.
- BASNAYAKE, CHANDANA S., MR.
- BOMBUWELA, B. D. KARUNANANDA,
- BOMBUWELA, R. M. THUSHARI P., MS.
- DE SILVA, DILIP, DR. - Accom. Person MRS. PRADEEPA DE SILVA
- DHARMARATNE, H. R. W., DR.
- GUNAWARDENA, N. E., DR.
- HERATH, H. M. T. B., DR.
- JAYASINGHE, SARATH, MR.
- JAYASINGHE, U. L. B., MR.
- KARUNARATNE, VERANJA, DR.
- KARUNARATNE, W. SUBODHI, MS.
- KUMAR, N. SAVITRI, PROF.
- KUMAR, VIJAYA, PROF.
- MUDALIGE, ANOMA P.,
- PARANAGAMA, PRIYANI A., DR.
- SULTANBAWA, M. U. S., PROF. - Accom. Person MRS. S. SULTANBAWA
- WANIGASEKERA, W. M. A. P., MS.
- WIJAYARATNE, D. T. U., DR. - Accom. Person
- WICKRAMARATNE, D. B. M., DR.
- WIJESEKERA, DR. R. O. B., DR. Accom. Persons MRS MARINA and MISS  
WIJESEKERA
- WIMALASIRI, W. R., DR.
- WIMALASIRI, K. M. SWARNA, DR.
- WANNIGAMA, G. P., PROF. - Accom. Person MRS HEMA WANNIGAMA

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**SWITZERLAND**

MOLLEYRES, LOUIS-PIERRE, DR.

**SWEDEN**

BAECKSTROM, PETER, DR. - Accom. Person MRS. ANITA BAECKSTROM

JANSSON, PER-ERIK PROF. - Accom. Person MR. MAGNUS JANSSON

LIMINGA, RUNE PROF.

PETTERSSON, JAN, PROF.

UNELIUS, C. RIKARD, DR.

**UNITED KINGDOM**

MORGAN, E. DAVID, PROF.

**INVITEES TO SAREC REVIEW MEETING - THURSDAY**

ADIKARAM, N. K. B., PROF.

BRECKENRIDGE, W. R., PROF.

EDIRISINGHE, JAYANTHI, DR.

GNANAPRAGASAM, NALINI, DR.

KARUNARATNE, ANJANI M., MS.

KARUNARATNE, S. P. H. H., DR.

MODDER, W. W. D., DR.

SANTIAPILLAI, C. V. M., PROF.

SIVAPALAN, A., DR.

WICKRAMASINGHE, R. L., DR.

## **THE ELEPHANT ORPHANAGE AT PINNAWELA**

The Asian elephant, *Elephas maximus* is one of the most seriously endangered species of large mammals in the world. It is distributed across thirteen countries including islands such as Sri Lanka, Sumatra and Borneo. The world population is estimated to be between 40,000 and 50,000, which is about a tenth of the population of African elephants. Of these about 3000 are found in Sri Lanka.

The main factor endangering elephant populations is the international demand for ivory encouraging the slaughter of elephants for their tusks. Although there has been world-wide agreement that it is necessary to prevent the movement of ivory across national borders and mechanisms set up for this purpose, the trade in ivory continues.

However, since the number of tuskers are low in Sri Lanka, this is not an important problem in Sri Lanka. While both the male and the female African elephant bears tusks, only the male Asian elephant is tusked. Only about forty percent of the Sri Lankan elephant population is male. Of this, surveys have suggested that less than ten percent have tusks. In contrast, ninety percent of South Indian male elephants are tusked. Poaching of ivory is therefore not the main cause of elephant deaths in Sri Lanka.

The elephant population in Sri Lanka is threatened by the dwindling land area available to it. The island of Sumatra for example with a land area seven times that of Sri Lanka supports a population only slightly more than that of Sri Lanka. With the expansion of human settlements, competition between man and elephant for the limited land space force elephants into looking at village settlements as a source of food. An elephant requires 150 kg of fresh plant material as food each day. The farmer whose crops are threatened is no friend of the elephant and these conflicts between the farmer and the elephants are the main cause of elephants being killed in Sri Lanka.

The killing of elephants often leaves isolated individual and if they are calves, there is a real danger of them too being unable to survive. The elephant orphanage at Pinnawela was established to protect these elephants. Elephants which appear to be in danger in the wild are captured and maintained at Pinnawela by the State. Since the survival of elephants in captivity is uncertain if they are released into forests, most of these elephants remain in the orphanage, with some donated to temples for use during religious ceremonies.

Elephants rarely breed in captivity but there was a recent birth at Pinnawela and you may have the opportunity to see the infant elephant on your visit. Elephants are extremely expensive to maintain and the more than sixty elephants at Pinnawela are being maintained by the orphanage by opening the orphanage to tourists and other visitors.

The elephants are fed milk, taken to the river nearby for a bath for about an hour and fed afterwards. We hope you will be able to see the elephants lazing in the river and being fed. You will have lunch at the Hotel Corporation Restaurant inside the orphanage.

## **GADALADENIYA, LANKATHILAKE AND EMBEKKE**

Embekke, Lankathilake and Gadaladeniya, a few kilometers away from Peradeniya were built during the Gampola period. King Bhuvanaika Bahu made Gampola, about twenty kilometres from Kandy on the Nuwara Eliya Road, his capital in the mid-fourteenth century and he was responsible for building the Lankathilake and Gadaladeniya temples.

The architecture of Gadaladeniya temple shows South Indian influence with its rounded domes very similar to those found in Hindu temples. During the period of its construction, South India had come under Muslim domination and it is believed that several artisans who lost their patronage in South India found employment in Sri Lanka. However, it must also be remembered that

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since Kings married only from Royal families, many Queens came from South Indian royal families and they may have brought with them some of the cultural and architectural traditions of South India.

The temple which houses a sedent Buddha image in its sanctum is 25 metres in length and about 12 metres in width and height. Except for the dome, the building is made of stone and the design is South Indian. However it differs from a South Indian temple in that it has a side shrine for a popular god.

The Lankatilake temple was completed in 1344 and is about 30 metres long and 25 metres wide. It originally consisted of four storeys and is said to have been about 25 metres high. Only the ground floor is used today although the second storey is present. The base of the building is stone and the building of brick. The present building is at least 150 years old. Its architecture has the traditions of the Polonnaruwa period but shows Burmese influence. The entrance has an especially big door to allow the temple elephant to enter the temple before religious processions are begun. Note the inscriptions on the rock nearby which are in the ancient Sinhala and Tamil scripts.

Embekke is known for its wood carvings. It is a Devale, a temple which is partly dedicated to a Hindu god. There are several Devales in the Kandyan kingdom. While Devales house Hindu gods, they are usually managed by Buddhists from the traditional noble families and are part of the popular religion in that they are believed to have the power of granting wishes.

What is interesting in Embekke are the wooden pillars in the main hall. Each of them has a different wood carving. While a few of the pillars have been replaced due to rotting, most of them are the original pillars. There are traditional Kandyan designs, representations of ancient Sinhalese legendary animals and of traditional activities like wrestling. One of them shows a European and this suggests that some of the pillars were carved in the sixteenth century after the arrival of the Portuguese.

## THE TEA COUNTRY

Sri Lanka's main agricultural export is tea and over 120,000 hectares of Sri Lanka's 64,000 square miles is tea country. Tea was introduced into Sri Lanka by the British about 130 years ago after the failure of coffee through fungal attack. The first tea was grown at Loolcondera Estate about 30 km from Kandy on the road going through the University. Most of the land surrounding Kandy including the University of Peradeniya campus site used to be tea country.

Tea was grown in the low country - the Southern part of the island, the mid country - near Kandy and the up country - from Pussellawa through Nuwara Eliya to Badulla. While the low country tea enjoys popularity in West Asia and up-country tea is the Ceylon Tea enjoyed by connoisseurs in the West, the demand for mid-country tea has been falling throughout the last fifty years. So much of the tea plantations near Kandy have been abandoned and used for village expansion.

You will visit a tea estate along the Nuwara Eliya Road, enjoy a cup at the tea centre and see a tea factory. The manufacture of tea is a highly skilled process and the price the tea fetches at the auction depends on the competence of the tea maker. This fact is well recognised and the tea maker is paid an incentive based on the price the tea obtains.

You will not see tea actually being made because this process usually takes place in the early hours of the morning. Tea is plucked by workers and sent to the factory during the late morning and the afternoon. They are then left to wither in rooms where air is blown over them. After withering the leaves are crushed using rollers and then further broken up and finally fired in an oven to produce the tea. The period of withering, the temperature of the withering rooms, the period of crushing and the extent of firing are crucial decisions affecting the quality of tea. Crushing usually begins between midnight and early morning since the tea is normally withered until that time.

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The made tea is then graded according to size and named fannings, pekoe and dust. The high quality tea usually is of slightly larger size but the dust is often popular because it is more economical to use. The quality of tea also depends on its flavour, which again depends on where it is grown and the climate at that time. Generally speaking, up-country teas have more flavour than low country teas.

## **SIGIRIYA ROCK**

Sigiriya Rock Fortress was built by King Kasyappa in the 5th Century. Kasyappa, although the eldest son of King Dhatusena was born of a woman who was not of "royal blood" and therefore, had no claim to the throne. One of Dhatusena's daughters was married to the Army chief, whose mother, the King's own sister, was burnt to death on the orders of the King because she had ill-treated his daughter.

Kasyappa's ambition to be King was helped by the Army chief who had turned against the King. They raised a successful rebellion against King Dhatusena, who was captured, imprisoned and later walled to death by Kasyappa. The rightful heir to the throne, Mogallan suspecting he would be the next victim of Kasyappa's ambitions fled to South India.

Kasyappa though King was not at ease as the people of his Kingdom had been known to rise against Kings who violated custom and tradition. He also expected Mogallan to return from India with an army. He built a fortress at the rock of Sigiriya to meet any challenges to his authority.

Kasyappa built a palace extending over an area of about two hectares on the summit of the 600 feet high Sigiriya rock. The ruins of his audience hall and palace, his private bath, a tank and a stone throne are still seen. He had guards stationed on the slopes at precarious positions which ensured that they could not sleep while on duty. The approach to the rock was through the mouth of the lion (Sigiriya means lion's throat). Although the steps leading to

the mouth and the lion's paws are well preserved, most of the structures between the lion's paws and the rock surface have long disappeared.

Sigiriya was overgrown and rediscovered by the British in the late nineteenth century. There are two approaches to the lion's paws, both of which have been renovated by the British. The vehicle takes you to the bottom of the rock where one of these approaches begin. Vehicles cannot be taken right up to the bottom of rock of the other approach. This approach takes you across the moat and through about 500 metres of royal garden before reaching the rock. Both approaches meet before the iron bridge built by the British to reach the mirror wall section.

Ramparts and moats enclosed a rectangular area of over sixty hectares which formed the inner city. The ramparts average about 10 metres high, the moat is about 4-5 metres deep and over 25 metres broad. Recent excavations have shown that this garden was beautifully laid out with many fountains, terraces, pavilions, picturesque boulders and caves.

Soon after the iron bridge, there is a spiral staircase which takes you to what is undoubtedly the best rock paintings in Sri Lanka and perhaps the world. There used to be 22 of them, mostly of female figures rising from clouds, but some were defaced about ten years ago. There is evidence that these paintings covered a substantial area of the western face of the rock.

These paintings have been interpreted in many ways. Some believe them to represent Kassapa's queens, some as celestial maidens and still others that the fair maidens represented Lightning and the dark maidens, the Clouds.

Between the iron bridge and the lions paw is a gallery constructed along a concavity of the rock extending over 150 metres. It has a parapet wall popularly called the mirror wall because of its original glass-like plaster which is still preserved. The mirror wall has some graffiti which have been written after Kassappa's time. Some of them are believed to have been done soon after Kassappa's time by visitors inspired by the paintings on the rock.

There have been many interpretations of the Sigiriya rock. It is claimed that it was not merely a military fortress. Kassappa may have built his palace in the

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heavens because he believed that he was an infallible God King. Having dubious claims to the throne, he may have even tried to overcome his complexes or tried to establish himself as a king with divine authority by building a palace in the clouds.

## **THE ROCK MONASTERY AT DAMBULLA**

The Dambulla Rock temple is claimed to have been built during the time of King Walagambahu but is probably of more recent origin and constructed over a long period of time. Like the Buddhist monastery in Ajantha in India, in Dambulla too, we see in a lesser way, a monastery in which the monks have spent much of their time making religious paintings and constructing Buddha images. The temple is in a cave on a ledge some way up the Dambulla rock and contains hundreds of stone and brick images of the Buddha in different poses. But Dambulla rock monastery is better known for its fine rock paintings. One of the caves has a source of water which it is said, drips at all times of the year, even during times of drought. It is claimed that this was the source of water for the monastery.

## **KANDALAMA HOTEL**

After visiting Dambulla and Sigiriya, you will have lunch in the recently opened Kandalama Hotel. The construction of the Hotel attracted controversy because of its closeness to the Kandalama tank, on which many villagers rely for their water. However, the Hotel has won an award for its Environmental design. The Hotel has been built to blend in with the rock and trees around it and has been acclaimed as being of the best modern architectural tradition.