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Isoquinoline Alkaloids from *Monanthotaxis trichocarpa*

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Twelve secondary or tertiary alkaloids and two quaternary alkakoids were isolated from the twig of *Monanthotaxis trichocarpa* (Annonaceae). Their structures were identified as (+)-laurotetanine (**1**), (+)-*N*-methyllaurotetanine (**2**), (+)-isoboldine (**3**), *S*-actinodaphine (**4**), (+)-*N*-methylactinodaphine (**5**), (-)-3-hydroxynornuciferine (**6**), (-)-asimilobine (**7**), (-)-anonaine (**8**), (+)-reticuline (**9**), (+)-coclaurine (**10**), (-)-coreximine (**11**), (-)-discretamine (**12**), (+)-magnoflorine (**13**) and dehydrodiscretamine (**14**). These were comfirmed as constitiuents of this plant for the first time.

Keywords: *Monanthotaxis trichocarpa*; Annonaceae; Isoquinoline alkaloid

Monanthotaxis trichocarpa (Annonaceae) is a straggling shrub or liane up to 7.5 m long distributed in tropical Africa.[1] The decoction of the leaves is taken as a remedy for headache by the Digo.[2] The aerial part is also used by the Giriama for same purpose.[3] The constituents of this plant have not been examined, but the previous chemical investigation of *Monanthotaxis* plants resulted in the isolation of essential oil,[4,5] cyclohexane derivatives[6,7] and alkaloids.[8] Several plants of the Annonaceae family have been used as remedy for various sicknesses by the Giriama.[2,3] We therefore examined the constituents of these Annonaceae plants. As a result, the plants used for analgesics were relatively rich in alkaloids.[9-16] Then we investigated the antinociceptive acyivity of *Xylopia parviflora* bark using experimental mice; some of the active alkaloidal components and their partial mechanism were clarified.[17] In the present study, *Monanthotaxis trichocarpa* was examined for the alkaloidal constituents, because this plant has been used as an analgesic.

The MeOH extract of the twig of *M. trichocarpa* gave secondary and tertiary alkaloidal fractions, (**2, 3-A**), and a quaternary fraction (**4A**), by the combination of conventional and ion-pair extractions using sodium perchlorate.[18] The **2** and **3-A** gave twelve alkaloids (**1**)-(**12**), and the **4A** gave two alkaloids (**13**)-(**14**), by preparative ion-pair HPLC, and if necessary, preparative TLC. On the basis of their spectral data and the comparison of authentic samples, the structures of these compounds were identified as (+)-laurotetanine (**1**),[19] (+)-*N*-methyllaurotetanine (**2**),[19] (+)-isoboldine (**3**),[19] *S*-actinodaphine (**4**),[19,20] (+)-*N*-mthylactinodaphine (**5**),[19] (-)-3-hydroxynornuciferine (**6**),[21] (-)-asimilobine (**7**),[22] (-)-anonaine (**8**),[22] (+)-reticuline (**9**),[22] (+)-coclaurine (**10**),[23] (-)-coreximine (**11**),[24] (-)-discretamine (**12**),[22] (+)-magnoflorine (**13**)[25] and dehydrodiscretamine (**14**).[22,26] These were comfirmed as constitiuents of this plant for the first time.

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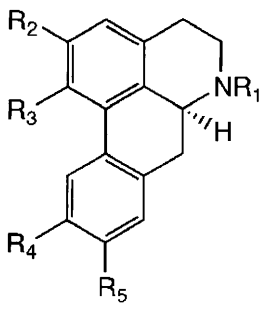

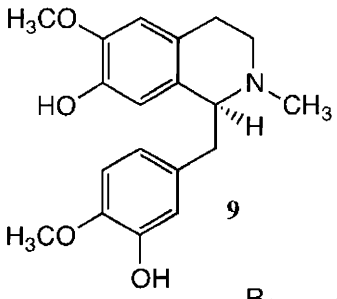

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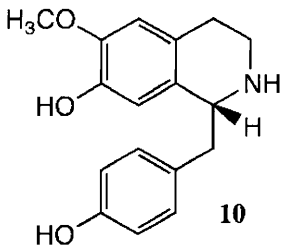

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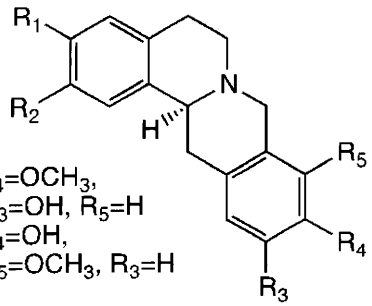
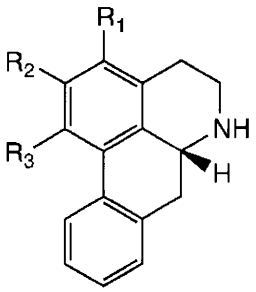
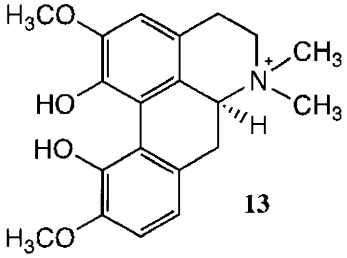
1 : R_1=H, R_2=R_3=R_4=OCH_3, R_5=OH
2 : R_1=CH_3, R_2=R_3=R_4=OCH_3, R_5=OH
3 : R_1=CH_3, R_2=R_4=OCH_3, R_3=R_5=OH
4 : R_1=H, R_2R_3=OCH_2O, R_4=OCH_3, R_5=OH
5 : R_1=CH_3, R_2R_3=OCH_2O, R_4=OCH_3, R_5=OH



11 : R_1=R_4=OCH_3, R_2=R_3=OH, R_5=H
12 : R_1=R_4=OH, R_2=R_5=OCH_3, R_3=H





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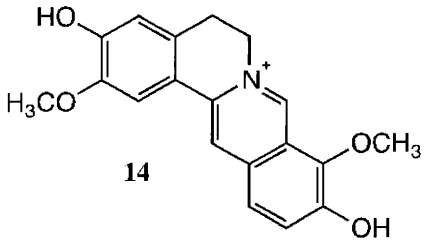

14

6 : R_1=OH, R_2=R_3=OCH_3
7 : R_1=H, R_2=OH, R_3=OCH_3
8 : R_1=H, R_2R_3=OCH_2O

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