## PP40. ALKALOIDS FROM LINDELOFIA MACROSTYLA

## R.M. RUZIBAEVA1\*, N.I. MUKARRAMOV1, R.Ya. OKMANOV1

<sup>1</sup>S.Yu. Yunusov Institute of Chemistry of Plant Substances AS RUz, 77, Mirzo Ulugbek Str, 100170, Tashkent

## \*Corresponding Author. E-mail: ruzibayevarayhon@mail.ru

*Lindelofia macrostyla* is a perennial plant belonging to the Boraginaceae family, genus *Lindelofia*. Blooms in May-August; bears fruit in June-September. The plant *L. macrostyla* grows in Central Asia - Iran, Uzbekistan and Afghanistan. The alkaloids such as lindelofine, lindelofine N- oxide, lindelofamine and alkaloid No1 are known to have been isolated from this plant.

We studied the aerial part of L. macrostyla collected in the vicinity of the village Chimgan in the Tashkent region. The air-dried crushed aerial part of the plant was moistened with 10% aqueous ammonia solution. The alkaloids were exhaustively extracted with dichloromethane. Distilled 2/3 parts of dichloromethane, then transferred to a 5% solution of sulfuric acid. The acidic solution was made alkaline with 5% aqueous ammonia solution and the alkaloids were extracted with chloroform. According to HPTLC data, 2 of them were identified as lindelofin and N-oxylindelofin alkaloids wich previously isolated from this plant. The alkaloids lindelofamine hydrochloride (1) and carboxypyrrolizidine (2) were separated preparatively using TLC plates (FLUKA, Germany). Alkaloid (1) in to was found lindelofamine



hydrochloride, determination results of NMR (1H, 13C). spectral date. Figure 1. The structure of Lindelofamine hydrochloride (1).

In this work, we isolated this alkaloid in the views of quaternary salts. Crystal of alkaloid (2) was grown in methanol and determined by X-ray diffraction analysis. In result 1-exo-carboxypyrrolizidine was isolated from *L. macrostyla* for the first time.



Figure 2. Structure of 1-exo-carboxypyrrolizidine (2)