

**ISOLATION AND IDENTIFICATION OF COMPOUNDS
FROM *ELAEOCARPUS GRANDIFLORUS* ENDOCARP
EXTRACT AS ANTIALLERGIC AGENTS
USING AN *IN VITRO* MODEL**

THESIS

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ABSTRACT

Allergic disorders represent an excessive immune response to environmental allergens, and natural therapies offer effective alternative options with lower toxicity profiles compared to conventional symptomatic synthetic drugs. This study investigated the large-scale isolation, structural elucidation, and *in vitro* antiallergic potential of bioactive secondary metabolites extracted from the endocarp of *Elaeocarpus grandiflorus*. Dried endocarp powder (20 kg) was extracted with 96% ethanol via stirring-assisted maceration, producing 252.9 g of crude extract representing a yield of 1.26%. Sequential liquid-liquid partitioning successfully isolated a concentrated 75% methanol fraction (14.34 g) rich in targeted polar phenolics and flavonoids.

Purification via reversed-phase MPLC and High-Performance Liquid Chromatography (HPLC) successfully afforded six target compounds. Molecular frameworks and relative stereochemistries were comprehensively elucidated using electrospray ionization mass spectrometry (ESI-MS) combined with 1D and 2D Nuclear Magnetic Resonance (NMR) spectroscopy (^1H , ^{13}C , DEPT, COSY, HSQC, and HMBC). The isolated constituents were identified as: (*E*)-3,3'-dimethoxy-4,4'-dihydroxystilbene (**1**), 1,2,3,7-tetrahydroxy-9*H*-xanthen-9-one (**2**), β -sitosterol-D-glucoside (**3**), a diastereomeric mixture of *erythro*- and *threo*-guaiaacylglycerol- β -coniferyl aldehyde ether neolignans (**4**), 2,3-dihydroxy-1-(4-hydroxy-3-methoxyphenyl)propan-1-one (**5**), and the dihydrobenzofuran neolignan dihydrodehydrodiconiferyl alcohol, or ($\pm$)-cedrusin (**6**).

To evaluate antiallergic efficacy, the isolated fractions and purified compounds were subjected to an *in vitro* cellular model using Rat Basophilic Leukemia (RBL-2H3) mast cells. Degranulation was successfully induced using calcium ionophore A23187 stimulation. The evaluation revealed that the crude partitions specifically the 75% methanol fraction (EGM), the hexane fraction (EGH), and the hexane precipitate (EGHP) exhibited significant concentration-dependent antiallergic activity. Conversely, the individual isolated compounds showed no significant inhibitory activity and were deemed inactive on their own in the cell based model at the tested concentrations. In conclusion, this study expands the scientific profiling of *E. grandiflorus* endocarp, establishing a diverse array of stilbene, xanthone, sterol, and neolignan structures that hold significant potential for development as natural, non-sedating antiallergic agents.