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Bioactive Constituents from the Rhizomes of *Aster tataricus* L. f. Afford the Treatment of Asthma through Activation of β_2AR and Inhibition of NF-κb

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SUMMARY. The rhizomes of *Aster tataricus* L. f. are used as materia medica or prescriptions for the treatment of asthma in Chinese folklore. To elucidate the mechanism of asthma treatment by *A. tataricus,* chemical constituents of this plant have been studied and screening for inhibiting NF-κB and activating β_2 adrenergic receptor of relevant compounds has been performed by dual luciferase reporter assays. As a result, 10 natural compounds have been identified from rhizomes of *A. tataricus* including β-sitosterol (**1**), daucosterol (**2**), kaempferol (**3**), quercetin (**4**), shionone (**5**), friedelin (**6**), epifriedelanol (**7**), atersaponin A (**8**), aurantiamide (**9**), and astin C (**10**). Of all the 10 compounds obtained, **3**, **9** and **10** showed activation of β_2 adrenergic receptor and **3**-**9** exhibited significant inhibition of NF-κB, which could present evidences of *A. tataricus* for the treatment of asthma.

RESUMEN. Los rizomas de *Aster tataricus* L. f. se utilizan como materia médica o medicamentos recetados para el tratamiento del asma en el folclore chino. Para dilucidar el mecanismo de tratamiento del asma por *A. tataricus,* han sido estudiados los componentes químicos de esta planta; la detección de la inhibición de NF-κB y la activación de los receptores adrenérgicos β_2 de compuestos relevantes ha sido realizada por los ensayos de reporteros duales de luciferasa. Como resultado, 10 compuestos naturales han sido identificados a partir de rizomas de *A. tataricus* incluyendo β-sitosterol (**1**), daucosterol (**2**), kaempferol (**3**), quercetina (**4**), shionona (**5**), friedelina (**6**), epifriedelanol (**7**), atersaponina A (**8**), aurantiamida (**9**) y astin C (**10**). De los 10 compuestos obtenidos, **3**, **9** y **10** mostraron activación de los receptores adrenérgicos β_2 y **3**-**9** exhibieron una inhibición significativa de NF-κB, lo que podría presentar evidencias del uso de *A. tataricus* para el tratamiento del asma.

KEY WORDS: Aster tataricus L. f., Asthma, Bioactive constituents, NF-κB, β_2 adrenergic receptor.

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