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Vilsmeier Reagent Initialed Sequential One-pot Multicomponent Synthesis of *N,O*-Disubstituted Glycolamides as Dipeptidyl peptidase 4 inhibitors

Shi-Han Lu,[a,b] Wan-Ping Yen,[a,c] Henry J. Tsai,[d] Chien-Shu Chen,[a] Fung Fuh Wong[a,b,*]

[a]*School of Pharmacy, China Medical University, No. 91, Hsueh-Shih Rd., Taichung, Taiwan 40402, R.O.C.*

[b]*Graduate Institute of Pharmaceutical Chemistry, China Medical University, No. 91, Hsueh-Shih Rd., Taichung, Taiwan 40402, R.O.C.*

[c]*Ph.D. Program for Biotech Pharmaceutical Industry, China Medical University, No. 91, Hsueh-Shih Rd., Taichung, Taiwan 40402, R.O.C.*

[d]*Department of Health and Nutrition Biotechnology, Asia University, Taichung 41354, Taiwan*

*Corresponding author. Tel.: +886 4 2205 3366 ext. 5603; Fax: +886 4 2207 8083.

E-mail address: wongfungfuh@yahoo.com.tw, ffwong@mail.cmu.edu.tw (F. F. Wong).

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Abstract: A series of *N,O*-disubstituted glycolamide derivatives have been successfully synthesized through Vilsmeier reagent initialed sequential one-pot multicomponent procedure from α-chloro *N*-arylacetamides with formamide/PBr_3 and acid chloride. The synthesis is straightforward and involved Vilsmeier formyloxylation reaction, decarbonylation, and esterification three steps. The strategy was also applicable to α-chloro *N*-(naphthalenyl)acetamide to prepare the corresponding *N,O*-disubstituted glycolamide products. All of *N,O*-disubstituted glycolamides were evaluated against dipeptidyl peptidase 4 inhibitory activity. Based on the inhibitory results, several of *O*-furan-2-carbonyl and *O*-quinoline-8-sulfonyl *N*-aryl glycolamide compounds possessed the better effectively inhibition of dipeptidyl peptidase 4.