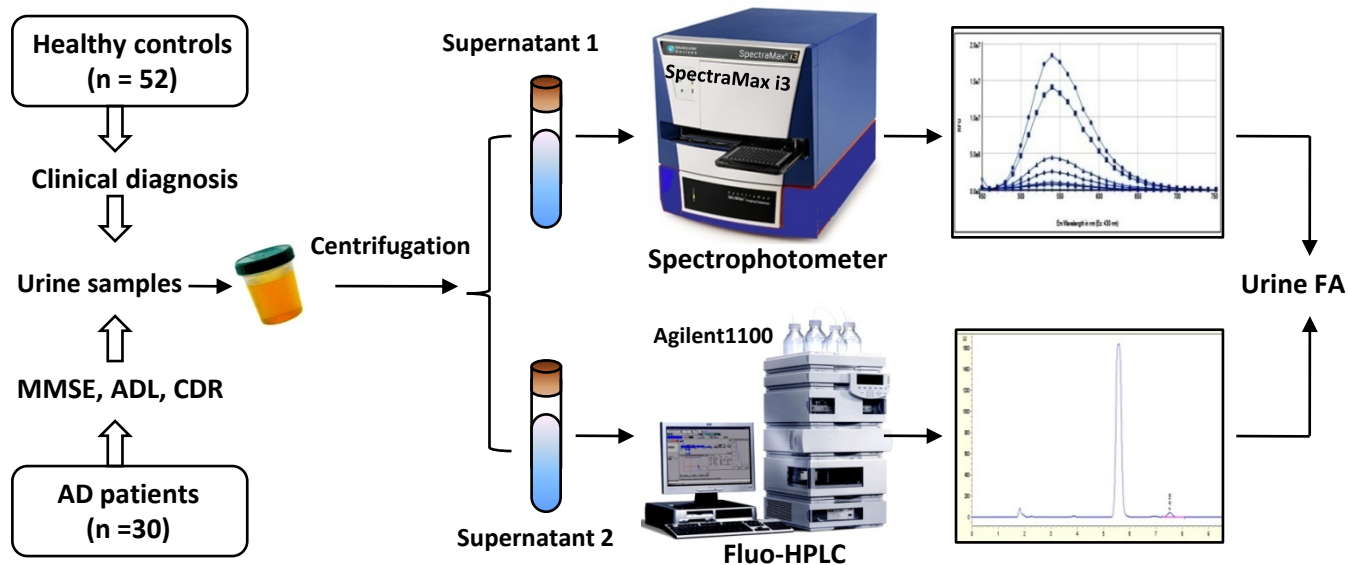


# Figure S1



**Fig. S1. The two methods for detecting FA in urine samples from AD patients and healthy age-matched controls.**

**Abbreviation:** FA: formaldehyde; MMSE: Mini-Mental State Examination; CDR: Clinical Dementia Rating; ADL: Activities of Daily Living Scale; AD: Alzheimer's disease; HPLC: high-performance liquid chromatography

Figure S2

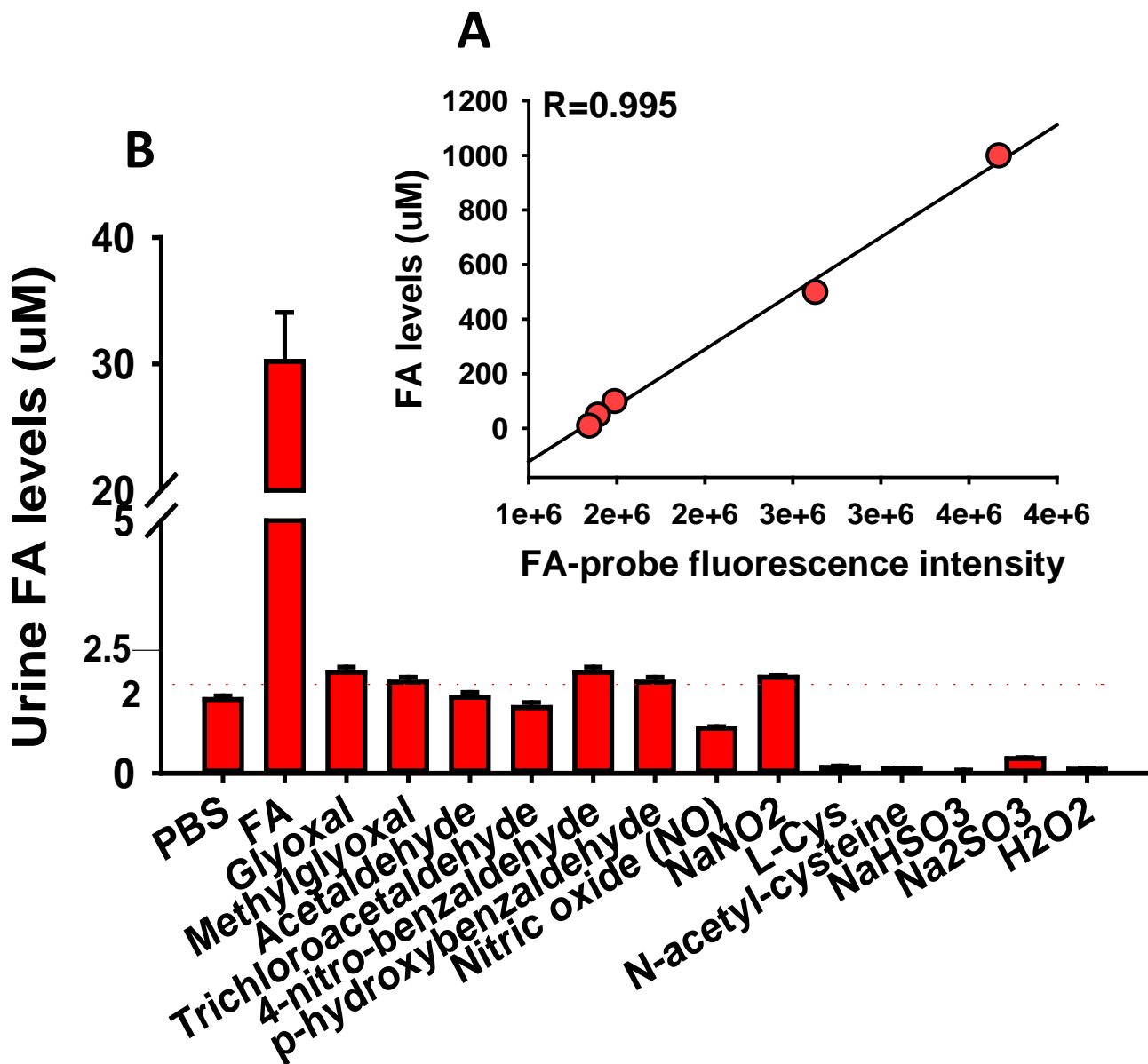


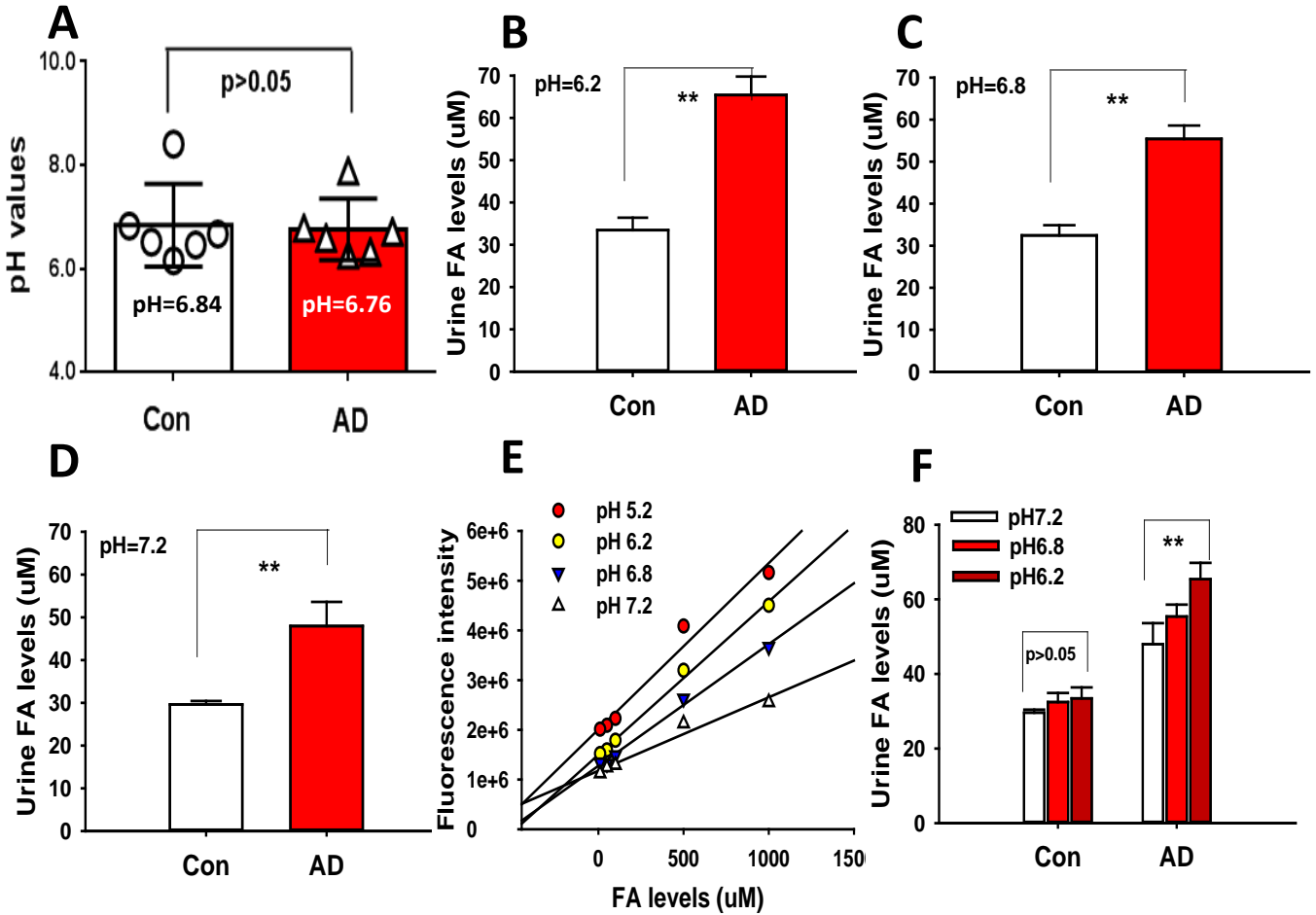
Fig. S2. Detection of urine FA levels after urine was added with various

relevant analytes in 10 mM PBS buffer (pH 7.4, 1 % DMSO).

The concentration of the analytes was 10  $\mu$ M.

Legend: PBS, glyoxal, methylglyoxal, acetaldehyde, trichloroacetaldehyde, 4-nitro-benzaldehyde, p-hydroxybenzaldehyde, nitric oxide, L-Cys, N-acetyl-cysteine, NaHSO<sub>3</sub>, and H<sub>2</sub>O<sub>2</sub>.

**Figure S3**



**Fig. S3. The effects of pH values on the detected urine FA levels.**

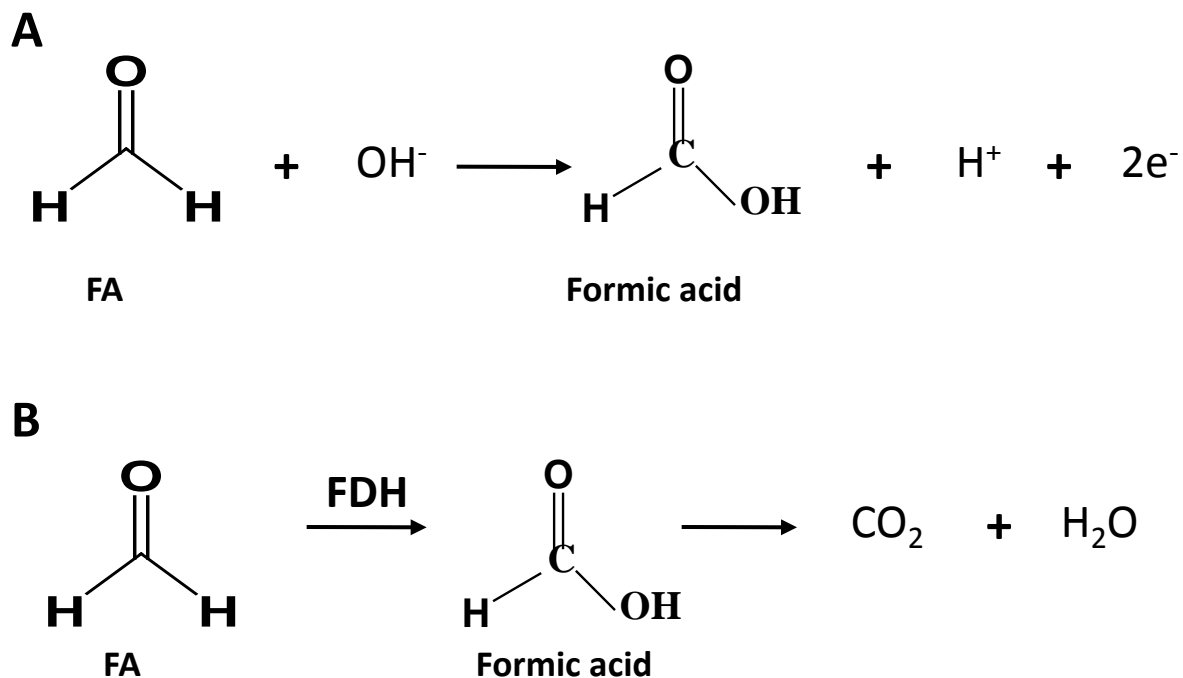
A. pH values detected in the urine from 6 AD patients and 6 age-matched controls.

B-D. Urine FA levels of urine sample at same pH, respectively.

E. Standard curve of FA levels of the same urine samples at different pH.

F. Comparing urine FA levels of urine sample at different pH.

**Figure S4**



**Fig. S4. FA induces urine acidification with or without enzyme-dependent pathways.**

**Abbreviation:** FA: formaldehyde; FDH: formaldehyde dehydrogenase.