

Baicalein induces cell apoptosis via the MAPK pathway in anaplastic thyroid cancer cells

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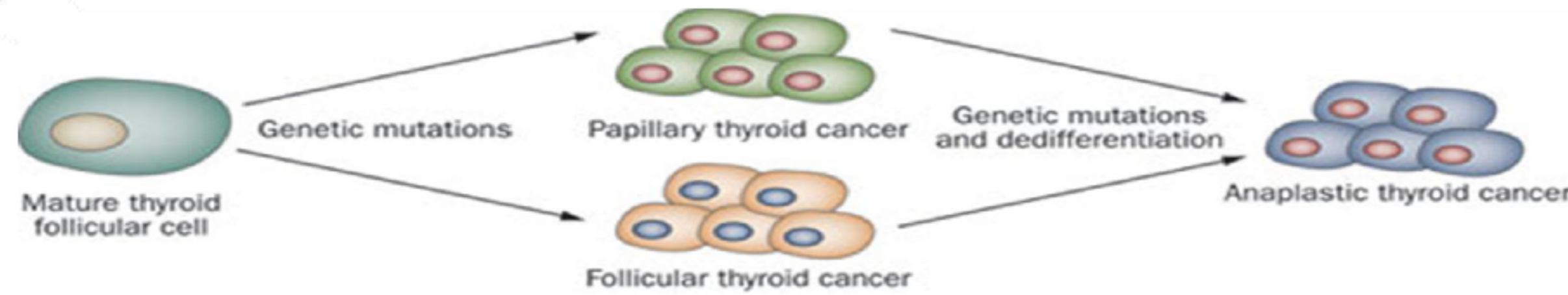
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ABSTRACT

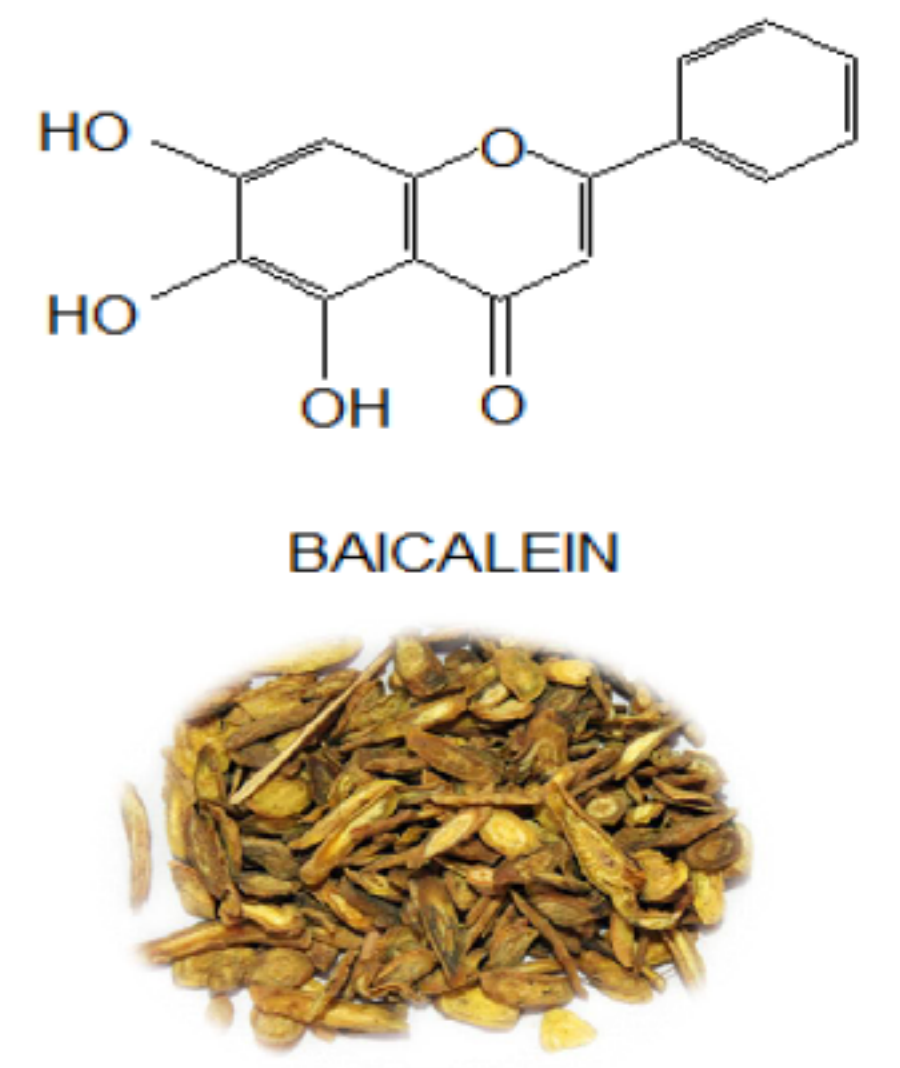
- **Objective:** In this present study, we aimed to investigate the potential effects of baicalein on FRO anaplastic thyroid cancer cells and the underlying mechanisms through which baicalein exerts its action.
- **Methods:** Cell viability was measured in FRO cells by MTT assay. The expression of apoptotic proteins, Bax, cleaved caspase-3, PARP, Cox-2, and MAP kinases, ERK, JNK, and p38 in FRO cells by Western blot, respectively.
- **Results:** Cell viability assay was indicated that baicalein potently suppressed the cell growth in a time- and dose-dependent manner. We also found that baicalein can induce the expression of apoptotic proteins, Bax, cleaved caspase-3, PARP, and Cox-2 and the phosphorylation of ERK, JNK, and p38 MAPK in a dose-dependent manner. Moreover, baicalein decreased the expression levels of E-cadherin and N-cadherin in FRO cells..
- **Conclusion:** These findings suggested that baicalein can induce apoptosis in anaplastic thyroid cancer cells through inhibition of the MAPK pathway

INTRODUCTION

- **Anaplastic thyroid cancer** (undifferentiated, less than 5% of all cases of thyroid cancers) is one of the most aggressive forms of malignancies which grow very rapidly. Tumors are poorly defined. Although several conventional medications have been applied for the treatment of anaplastic thyroid cancer, but current therapies still rather limited and novel therapeutic strategies are require



- **Baicalein** is a flavone, a type of flavonoid, originally isolated from the roots of *Scutellaria baicalensis* and *S. lateriflora*, and is known various biological properties such as antiinflammation, antioxidation, antiallergy, anticancer, and neuroprotection.
- In cancer study, the inhibitory effects on growth and invasion/metastasis in colorectal, gastric, hepatocellular, pancreatic cancers were reported.



RESULTS

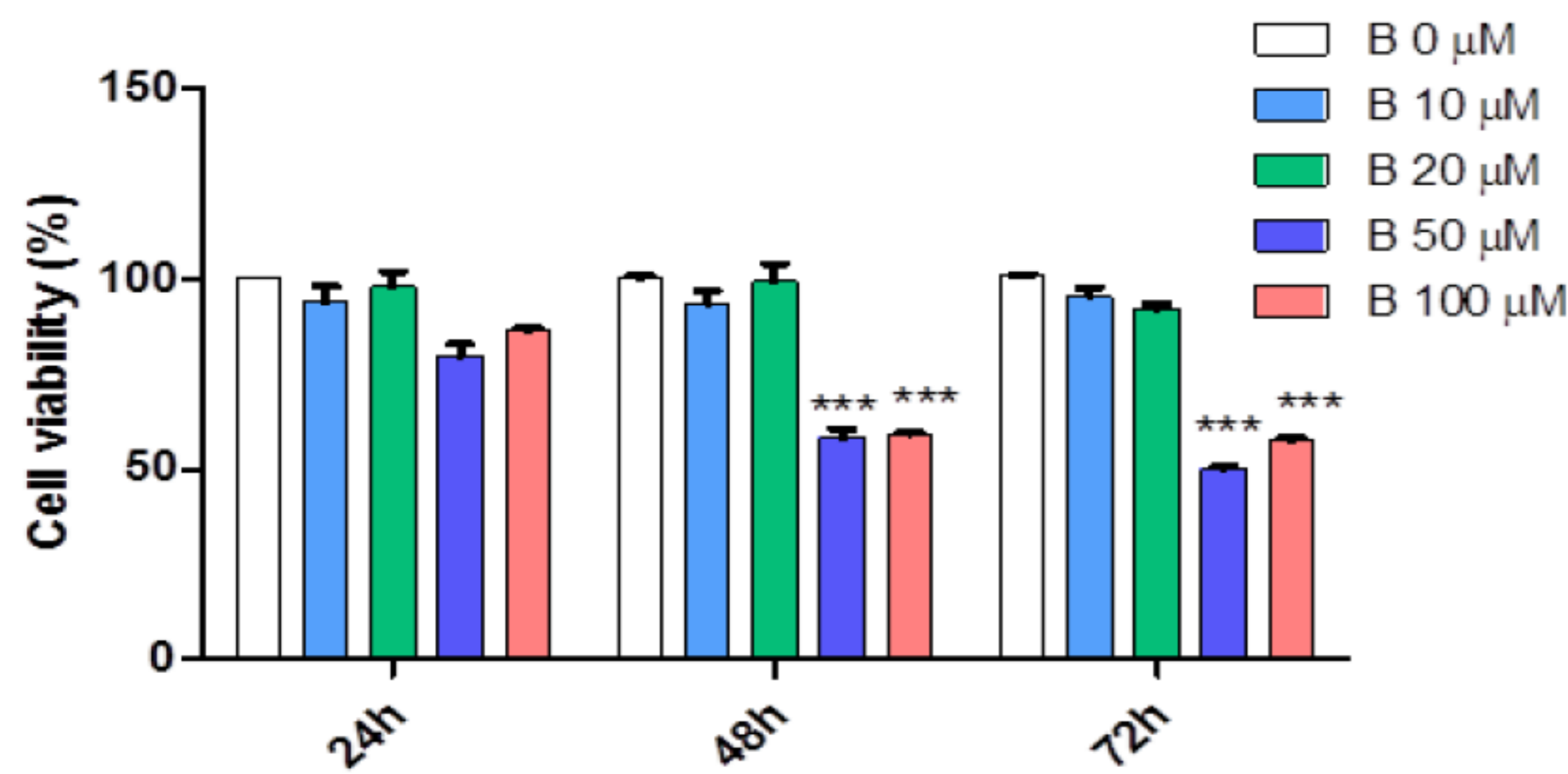


Figure 1. Effect of baicalein on cell viability in FRO cells
Cells were treated with baicalein (B) for 24 h, 48h, and 72h. Cell viability was measured by MTT assay. Values are the means±SEMs of three independent experiments. ***P<0.001 vs. normal cells (B 0 μM)

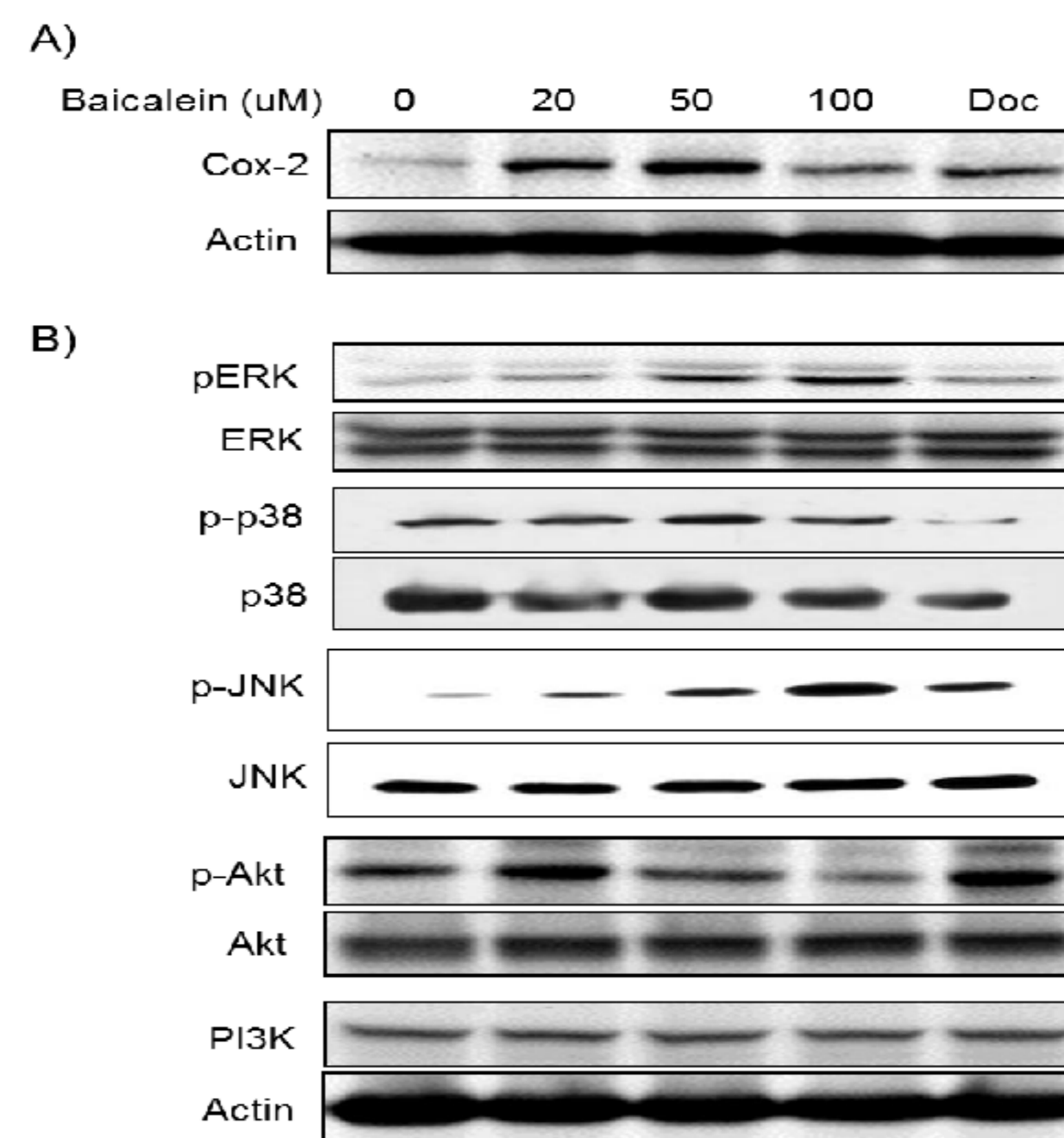


Figure 3. Effect of baicalein on the expression of inflammatory and signal proteins in FRO cells
Cells were treated with baicalein (B) for 48h. The expression of Cox-2 (A), and the phosphorylation of three MAP kinases, ERK, JNK, p38 was determined by Western blot, respectively. Actin was used as an internal control. Doc: docetaxel 50 μM as a reference drug.

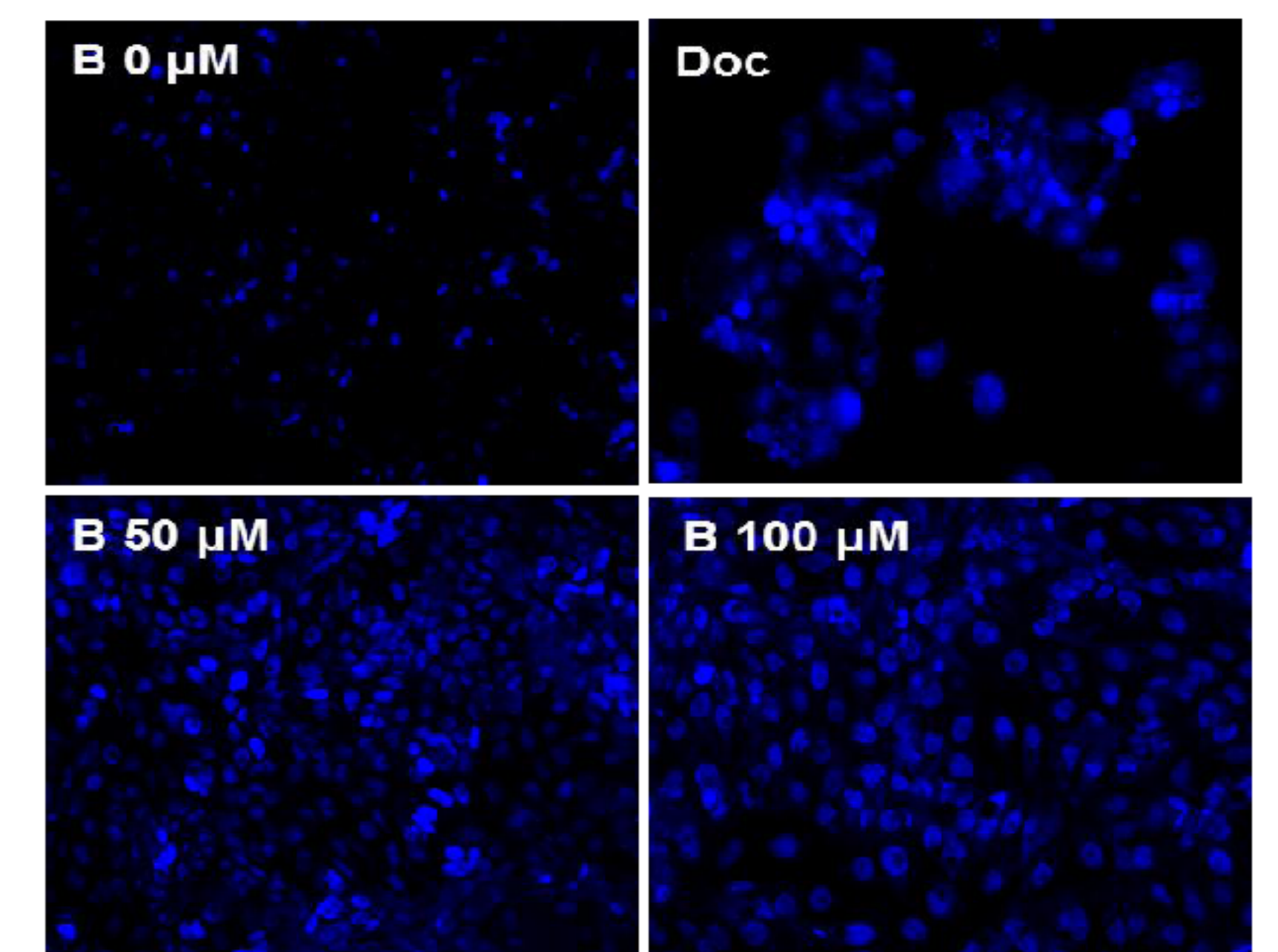


Figure 4. Effect of baicalein on apoptosis in FRO cells
Cells were treated with baicalein (B) for 48h. The cell apoptosis was determined by Hoechst stain. Doc: docetaxel 50 μM as a reference drug.

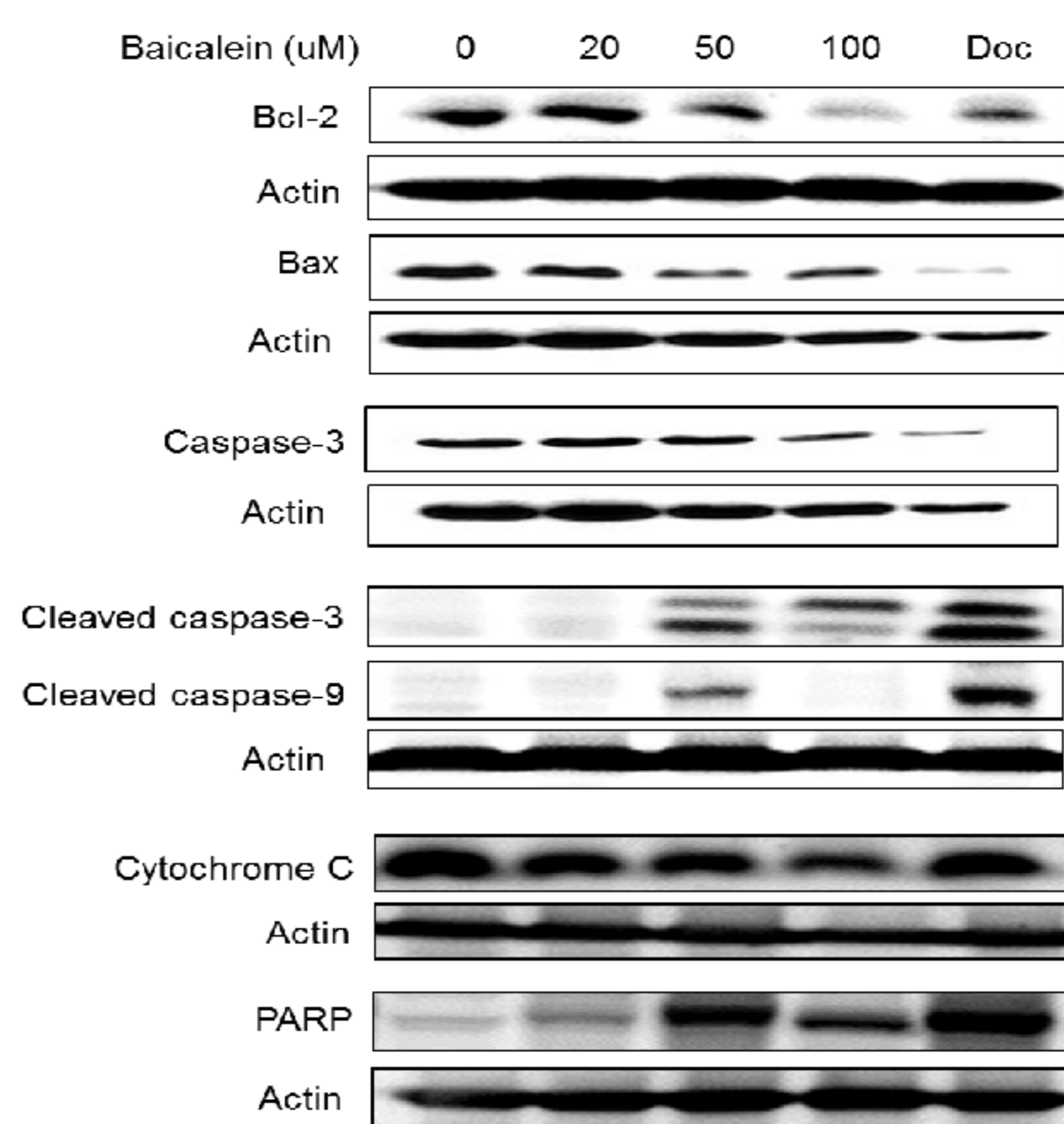


Figure 2. Effect of baicalein on the expression of apoptotic proteins in FRO cells
Cells were treated with baicalein (B) for 48h. The expression of Bcl-1, Bax, Caspase-3, cleaved caspase-3, -9, cytochrome C, and PARP was determined by Western blot, respectively. Actin was used as an internal control. Doc: docetaxel 50 μM as a reference drug.

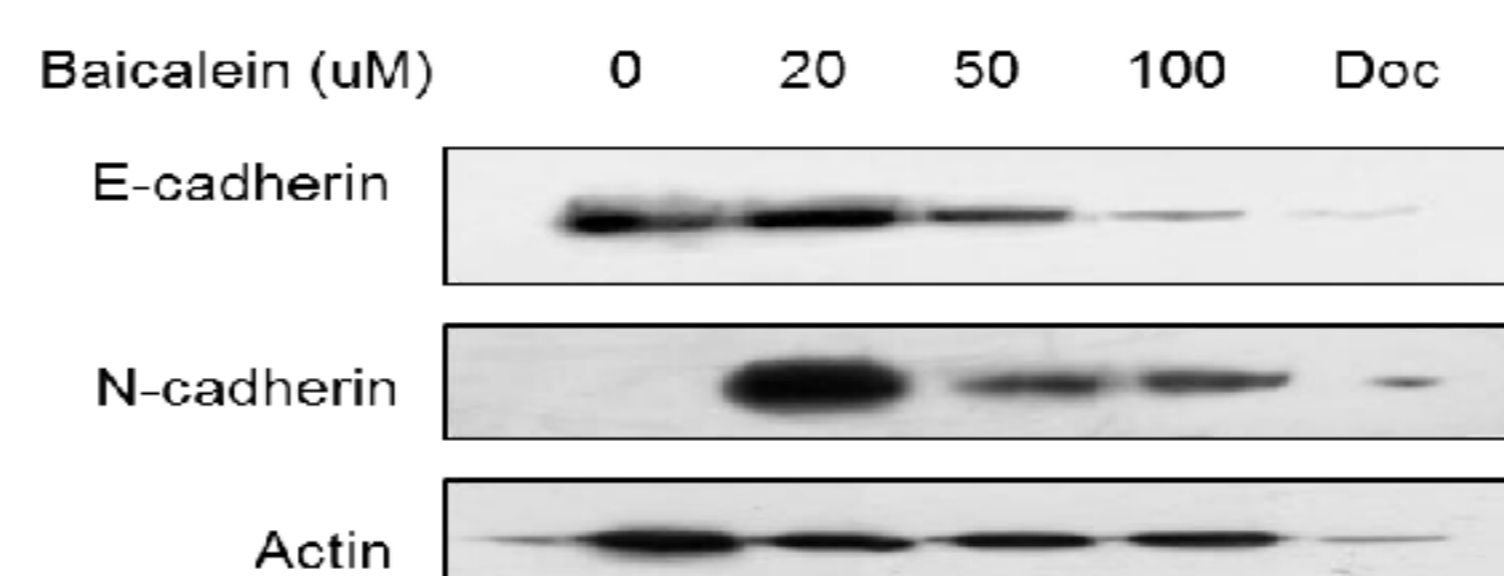


Figure 5. Effect of baicalein on the expression of E-cadherin and N-cadherin in FRO cells
Cells were treated with baicalein (B) for 48h. The expression of E-cadherin and N-cadherin was determined by Western blot, respectively. Actin was used as an internal control. Doc: docetaxel 50 μM as a reference drug.

